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The Building of the National Academy of Sciences and National Research Council

Bertram Grosvenor Goodhue, Architect

By W. K. Harrison

IN March, 1918, Doctor George Ellery Hale, honorary chairman of the National Research Council, wrote to Mr. Bertram G. Goodhue telling him that the Federal Commission of Fine Arts had informally suggested him as the architect of the new building for the National Academy of Sciences at Washington. Considerable discussion ensued as to the site and character of the building—Mr. Goodhue up to this time had been known almost exclusively for his Gothic and Spanish Colonial buildings. He himself wrote the following memorandum after the site was determined:

Lamp either side of entrance "light."

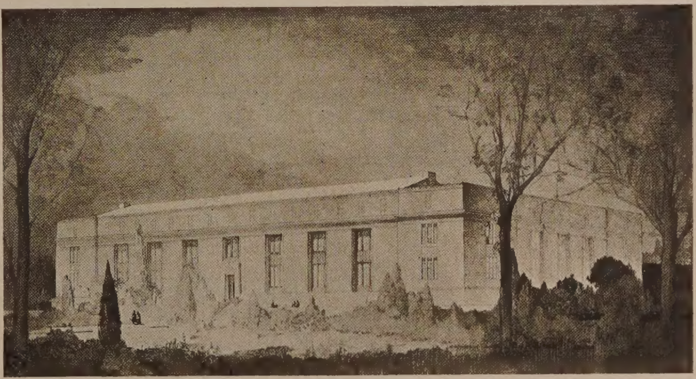
"Three or four years ago Doctor Hale asked me to have sketch designs prepared for a building for the Academy of Sciences, to be built in Washington. The site was indeterminate, and I was asked to look over the field of such and report. The summit of the hill on Sixteenth Street, about a mile from the White House, appealed to me most strongly, since it was almost ideal for a building of irregular character, in which I believe—a belief at that time clearly shared by Doctor Hale. Irregular in this case means, of course, that the plan can be made as practical and convenient as may be, without regard for symmetry. This site, however, was disapproved, though for reasons never made very clear to me.

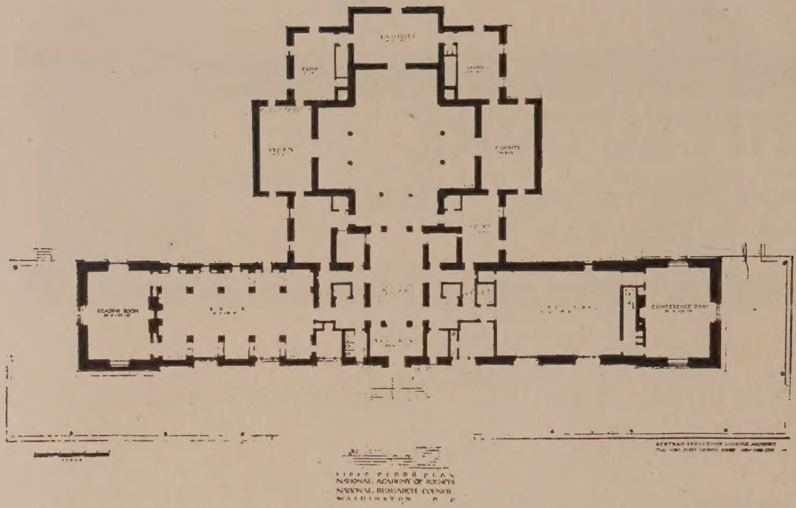
"After considerable lapse of time I was informed that a site had been definitely chosen, namely that lying between B and C and Twenty-first Streets, 531 feet long, and 422 feet deep. Though bare and uninteresting at present, this is capable of beautiful and effective treatment, though without distinction in itself beyond the fact that it lies within a thousand feet or so of the Lincoln Memorial. Contrasting it with the Sixteenth Street hill, I felt distinctly discouraged, for I recognized that any building here must needs be much duller and more formalistic in its character. Explaining this to Doctor Hale, he was good enough to express the belief that the added difficulty would only spur me and my men on to greater and more successful efforts. Therefore I began the preparation of rough sketches."

The problem forced on the architect by the exigencies of the site was two-fold. The unfavorable condition of the ground, due to an old stream-bed, covered up when the former tidal flats were filled in years ago, necessitated great precautions in the building of the foundations. Seventy-four concrete piers, five feet square, sunk to bed rock, support the girders upon which the walls rest. The girders supporting the terrace rest on thirty-three large steel tubes, driven to bed-rock, emptied, and filled with concrete.

Less easily disposed of was the æsthetic problem, that of reconciling the architect's own feeling for the practical and picturesque, and his distaste for the merely academic, with the classic treatment demanded by its situation and surroundings. Inasmuch as it faces the west end of the Mall, and forms part of the heroic scheme whose axis extends from the Capitol and the proposed Arlington bridge, the new building must harmonize with the four focal points of the system; that is, the Capitol, the Washington Monument, the White House, and the Lincoln Memorial. Its nearness to this last demanded a treatment that, although monumental, should be unobtrusive enough not to detract from the Memorial.

This necessary simplicity of the building gave greater


Study for National Academy of Sciences.



Plan, National Academy of Sciences.

importance to the kind of material to be used for the exterior, and finally white Dover marble was used, laid in irregular courses, and with enough variation of grain and of tone to give life to the surfaces. The general character of the building is Greek, and entirely in harmony with what Doctor Charles Moore calls "the Washington theme," but many modern requirements made it seem inadvisable to attempt any historical style. The effort has been not to reproduce dry classic forms, but to follow as far as possible the Greek ideal, in designing each bit of detail to fit its particular place and purpose. For example, the central doorway, with its suggestion of a false pediment, and carved decoration (an allegory of the evolution of life, under the warming rays of a conventionalized sun), is at once reminiscent of an early stele, and of a Byzantine ivory. The doors themselves focus the artistic interest of the façade at the axis of the building. They are made of wood covered with bronze plates, and are magnificently embossed, the eight panels representing crucial episodes in the history of science.

The glass and bronze panels, which assure plenty of light to the front pavilion, are also embellished with bas-reliefs in which a procession of the great founders of science, from ancient to modern times, appears, and without detracting from its dignity, they (the large panels) give the building a utilitarian character. In fact, the building has much of the character of Latrobe's Washington designs, although to express the multiplicity of new practical requirements since the building of the Treasury a freer adaptation of the Greek was necessary, in the same way that modern developments have forced, and made possible, the extension of the mall system laid down by Major L'Enfant in his original plan of Washington.

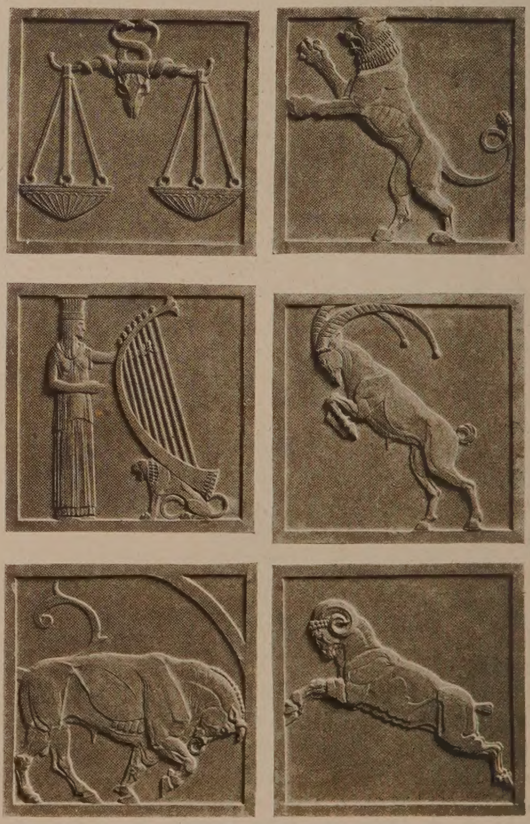
Mr. Goodhue tried to use the Greek detail on a modern building. He confessed to the impossibility of dating the style of the building, calling it Alexandrian.

The far-seeing vision which we believe to be characteristic of this country was well exemplified by the ability of Washington and L'Enfant to visualize in the place of open fields a capital city of 800,000 people, at that time the population of London, the largest city in the world. Moreover, the city of Washington seems to have been the first city to be built according to a preconceived plan. Major L'Enfant certainly had the precedent of no earlier city development on any such scale as the one he drew up, although he wrote to Jefferson, then secretary of state, to ask for plans of the great cities of Europe. Jefferson, himself very much interested in architecture and planning, was able to furnish him with most of them, including the newly developed Bordeaux, Orleans, and Paris.

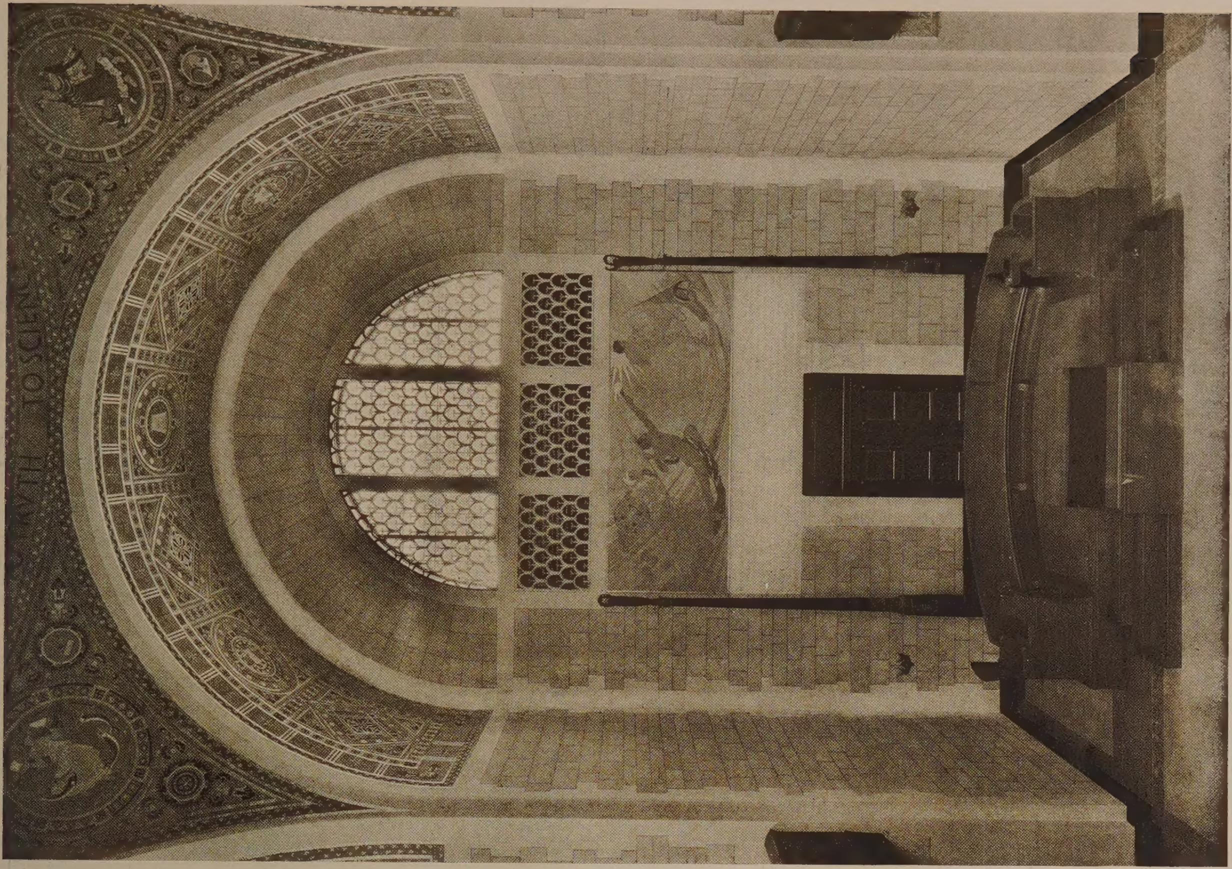
The plan of the National Academy building, like that of the city, has been designed to allow for future expansion. The fully completed building will be in the form of a square with two light courts on either side of a central pavilion. The present construction includes only the central pavilion housing the main auditorium and seven dependent exhibition rooms, and one side of the contemplated square, the four-story frontispiece of the building. Eventually this will be balanced by a construction of the same size at the back, and two connecting wings at the sides completing the square.

The central hall, which can be used as an auditorium, is cruciform in shape, the four arms vaulted to support a central pendentive dome. The vaulting is of genuine construction, and covered with acoustic tile and elaborately decorated in color and gilt by Hildreth Miere. The eight panels of the dome are allegorical figures representing the principal sciences. The four elements of the ancient Greeks are personified in the figures of earth, air, fire and water on the pendentives. At the top of the arch soffits are the insignia of four great scientific academies, flanked by representations of scientific advances made in the respective countries.

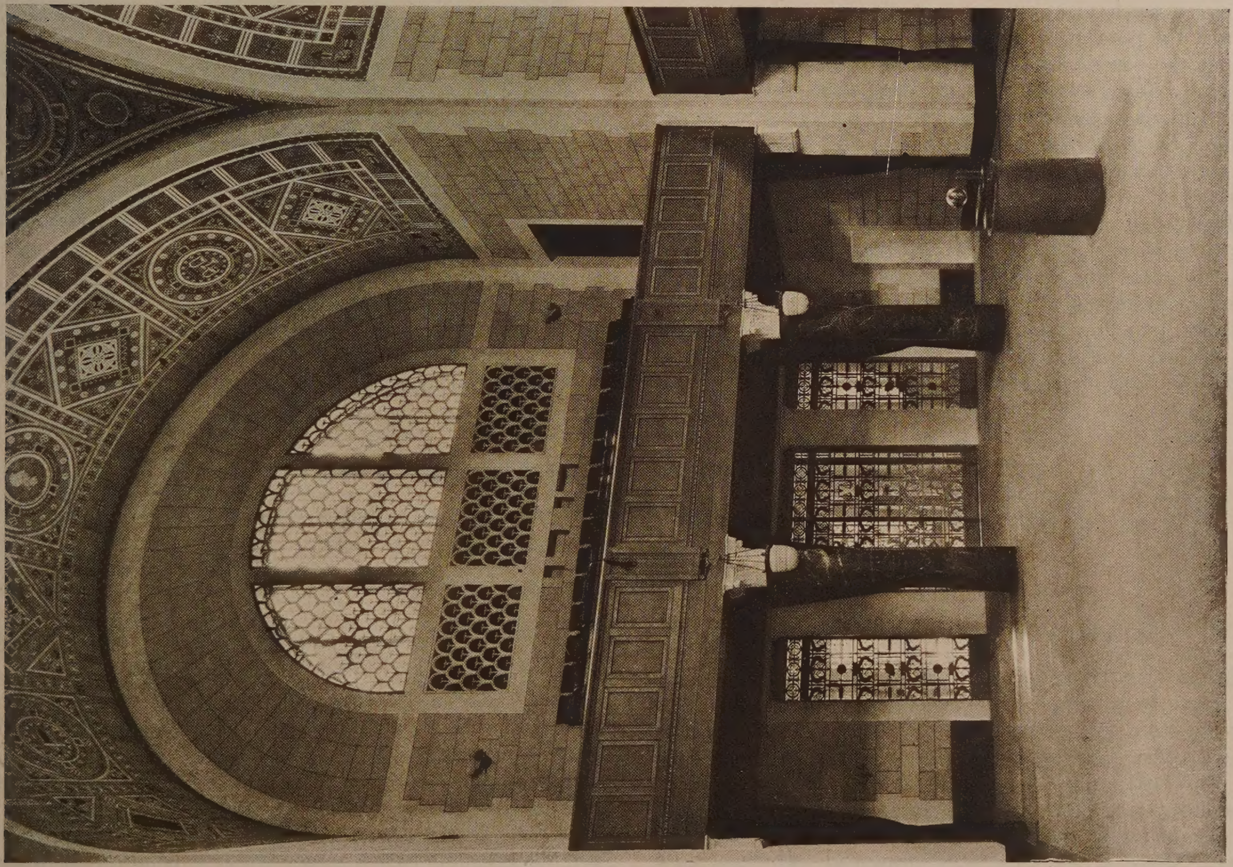
At the apex of the dome is a conventionalization of the sun surrounded by symbols of the planets and pierced by a central opening. Through this the direct rays of the sun are projected by mirrors to a lens, which forms an image of



Models for bronze grille.



CENTRAL HALL, LOOKING TOWARD SPEAKER'S PLATFORM.



CENTRAL HALL, LOOKING TOWARD ENTRANCE HALL.

the sun on a bronze drum (which has for decoration symbolical figures of the various ancient sun gods) in the middle of the central hall. Here visitors can see the sun spots which change from day to day, or examine the spectrum of the sun and prove for themselves the presence of iron vapor in its atmosphere.

Model for lock.

A Foucault pendulum demonstrating the rotation of the earth is hung from the eye of the dome.

The beautiful large panel facing the entrance is painted by Albert Herter, and represents Prometheus stealing fire from heaven, typifying the beginnings of human knowledge. The inscription from the "Prometheus Bound" of Æschylus, recites the benefits conferred by science on the world. The windows of the central hall are provided with adjustable shutters impervious to light, as the scientific lectures to be given here require the best possible screen projection.

The seven small exhibition rooms opening from the central hall are very simple in character, but are equipped with every mechanical appliance to display current discoveries and the progress of scientific research. From the main entrance the central hall is reached through a simple vestibule and a foyer screened at its beginning and end by a bronze and glass grille, with the signs of a zodiac in intricate framing. On either side are the stairs and elevators. Beyond these to the left is the library, with a reading-room opening out of it.

The centre of interest of the library, otherwise quite utilitarian, is in the fireplace at its end, with carved overmantel representing the history of the art of writing. The reading-room beyond is more intimate in character. Above the walnut panelling runs a painted frieze, by Albert Herter, with the seals of the great universities of the world.

To the right of the foyer hall as one enters the building is the lecture-room, designed for meetings or lectures not large enough to fill the central auditorium. Beyond is the conference-room, somewhat more formal in character than the reading-room, which it balances at the other end of the building.

The second and third floors house the various offices of the National Academy of Sciences and the divisions of the National Research Council. The basement is given over to a two-story stack-room for the library, a shop and laboratory for the preparation of exhibits, and several rooms used for other purposes.

The as yet immature landscape gardening was designed by Charles D. Lay, to carry out Mr. Goodhue's idea of the building as a central pavilion in a small but heavily wooded park.

A great deal of the interest of the building is due to the symbolism and the subjects illustrated by the sculpture. For much of this Mr. Gano Dunn, the chairman of the building committee, and Doctor George Ellery Hale are largely responsible.

The sculpture, which constitutes almost the only decoration on the building, is by Lee Lawrie, who has collaborated with Mr. Goodhue on most of his important work. This combination of architect and sculptor, so vital in the production of the great buildings, has rarely been equalled in modern times, and has produced what should prove to be an enduring contribution to the beauty of Washington.

Model, "Darkness and Light."

The Purposes of the Academy

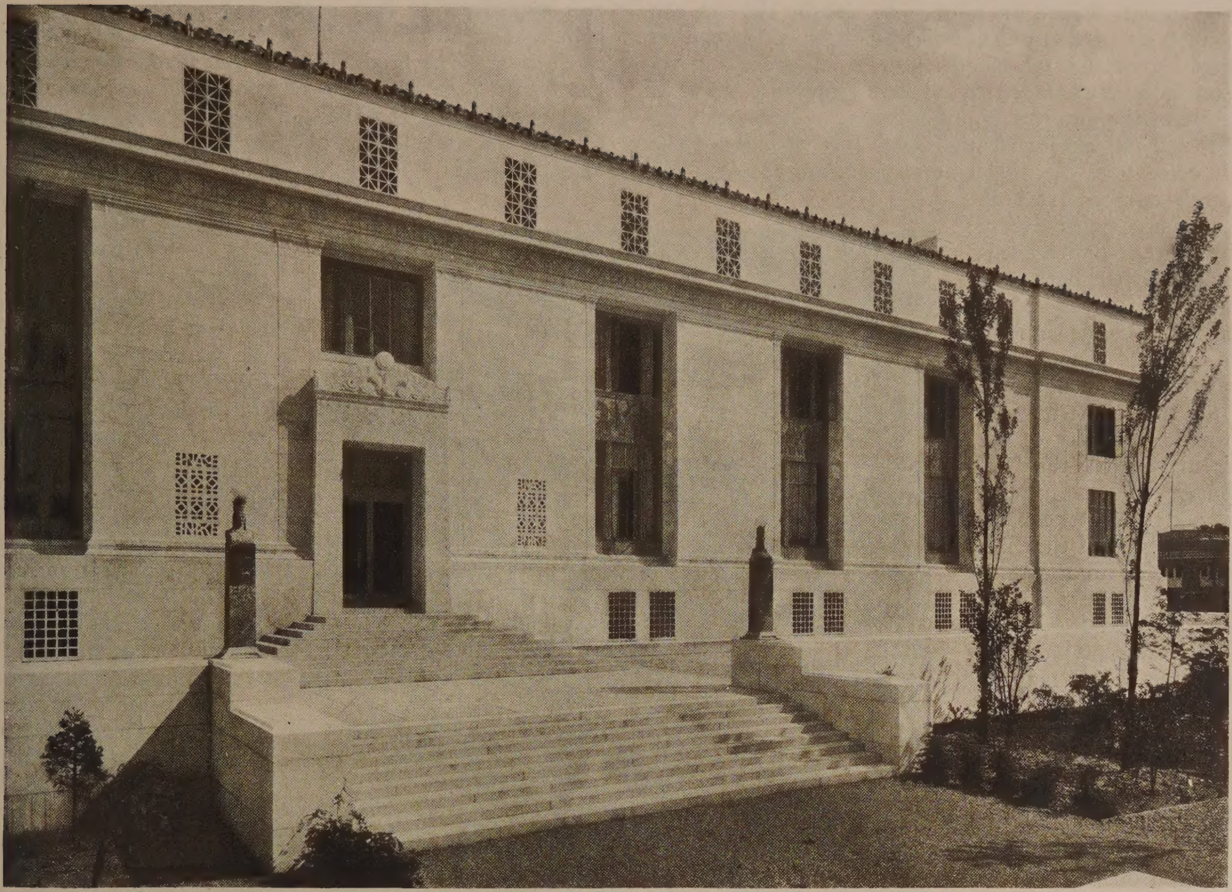
From an article on "A National Museum of Science and Research," in *Scribner's Magazine*, November, 1922

By George Ellery Hale

Honorary chairman of the National Research Council, author of "The New Heavens," etc.

A MUSEUM OF DISCOVERY AND PROGRESS

ONE of the prime purposes of the new building is to serve as a means of keeping the public in touch with the progress of science and to demonstrate the importance of research. An illustration based on recent experience will show how this may be done. Within the last few years an extraordinary outburst of interest in wireless telephony has brought radio outfits into tens of thousands of American homes. Most of the apparatus employed has been made by amateurs, who have contributed many novel and useful ideas to the progress of the art. This newly awakened enthusiasm affords a unique opportunity to advance the interests of science and research. The vast majority of the radio amateurs are attracted chiefly by the novelty of the subject, the pleasure of receiving messages from far-away sources, and the opportunity to exercise the mechanical ingenuity innate in so many American boys. Few realize that wireless communication is not the sole creation of Marconi



Detail of façade.

and other inventors, and fewer still appreciate the nature or importance of the fundamental researches of the physicists who made it possible. But all are learning of electrical methods and devices, and better still, those who make their own apparatus are acquiring some of the pioneer spirit and the self-reliance that form the necessary stock in trade of every original investigator. Here, then, is a rare opportunity to discover and develop latent talent.

One of the exhibition-rooms in the new building will contain the latest forms of radio apparatus, with which the public can receive messages from the most distant points, and amateurs can study methods of construction and installation. Wireless telegraphy and telephony, and long-distance telephony by wire, with loud-speaking transmitters, will all be demonstrated. But the exhibit will not stop at this point. Taking advantage of the amateur's interest, it will lead him back by striking illustrations and by actual experiments to the laboratory of Hertz, who detected wireless waves by their power of producing sparks; the earlier demonstrations of Henry, who recorded the waves sent out by distant lightning and reproduced them experimentally; the researches of Maxwell, who first conceived of waves in the ether when engaged in his mathematical investigations on the electromagnetic theory of light; the pioneer work of Faraday, who visualized lines of force, and conceived the ether as a medium of transmission.

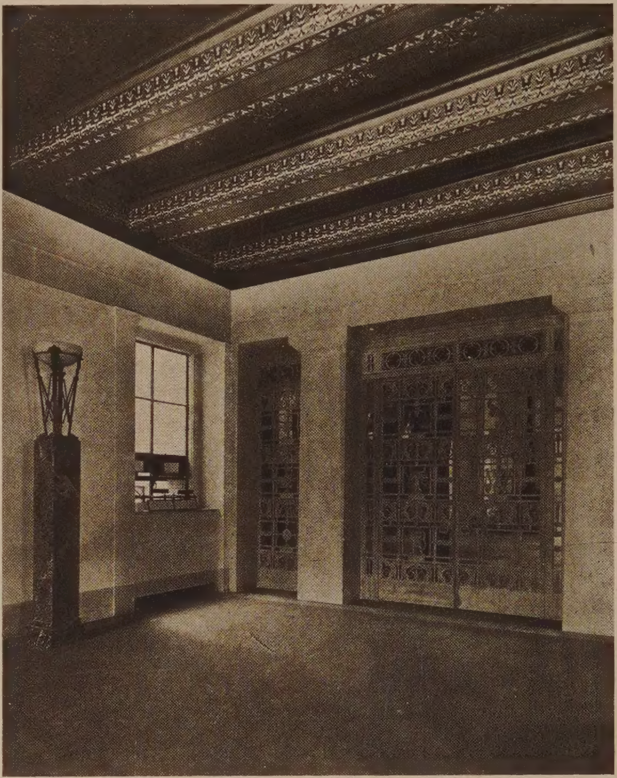
Hitherto the United States has produced few great physicists. Is it not probable that some of these boys will be led to recognize the fundamental importance of science and to see with Carty, Whitney, and other leaders of industry that the greatest advances arise, not merely from the direct attempt of the inventor to solve some special problem, but even more truly from the pioneer work of the scientific investigator, who discovers the phenomena and formulates the laws that underlie and render possible both invention and industry? "You can't have applied science unless you have science to apply," and the industrial research laboratories now move so closely in the wake of the physicist and chemist that the scientific discovery of to-day becomes the working device of to-morrow.

An excellent illustration of this is afforded by the recent development of the audion tube, which has made wireless telephony possible. No better means of interesting the amateur in fundamental problems of physics could be imagined. It is but a step from this familiar device of the radio operator to the brilliant phenomena of the electric discharge that led Crookes to detect a "fourth state of matter" and enabled Thomson, Rutherford, Millikan, and others to discover and isolate the electron and to determine the true nature of matter itself.

THE SUN AND THE AURORA

Another easy transition, helping to broaden the student's vision by showing him the interrelationship of the various branches of science, will lead him from the glowing gases of vacuum tubes to the phenomena of the aurora and their seat in the sun. The colored and pulsating striæ of gases at low pressure are produced by passing through them a stream of electrons, resulting from an electric discharge. In the same way the gleam of the aurora arises from the bombardment of the earth's upper atmosphere by electrons shot out from the sun. These come to us continuously, so that the aurora, though too faint to be seen by the eye, can be detected (in southern California) by the spectroscope on any night, even through clouds. But when great and active sun-spots, surrounded by violent eruptions, are near the centre of the sun, the rain of electrons is enormously increased, and the aurora is brightened into visibility. The electric currents in the higher atmosphere are accompanied by earth currents, which sometimes become so intense that they interfere with telegraphy and even burn out ocean cables (as in May, 1921). A recording magnetograph, mounted near the entrance of the central hall, will show the spasmodic fluctuations in the intensity of the earth's magnetism that accompany these electric storms, and the visitor can observe the source of the electrons by going to the middle of the hall, where a large image of the sun, formed by a cœlostat telescope, mounted on the dome above, may be seen. The sun-spot responsible for the disturbance will be plainly visible, and its changes in form, as well as its shifting position on the disk caused by the rotation of the sun, can also be followed from day to day.

This takes us to the sun, which exhibits electrical and magnetic phenomena on a colossal scale in its own atmosphere. The chemical composition of this atmosphere is easily shown by the spectroscope within the circular drum at the centre of the hall. Light from the solar image, passing through a narrow slit in the upper face of this drum, descends to an optical grating near the level of the basement floor, is analyzed into its constituent parts, and sent back in the form of a brilliant spectrum. By looking down through an eyepiece near the sun's image the visitor can see this spectrum, crossed by the numerous dark lines that characterize the chemical elements present in the vaporous atmosphere of the sun. Hundreds of these lines are due to iron, easily identified by touching a button, which starts an electric arc, vaporizes its iron poles, and permits the resultant light to descend through the slit, side by side with the light of the sun. The bright lines of iron in the arc, coinciding exactly with the dark lines of iron in the sun, may then be seen at a glance. It will also be possible with this apparatus to show the widening or splitting of certain lines due to the magnetic fields in sun-spots, which are caused by swarms of electrified particles whirling in the immense vortices or tornadoes that constitute the spots.


Entrance hall, looking toward central hall.

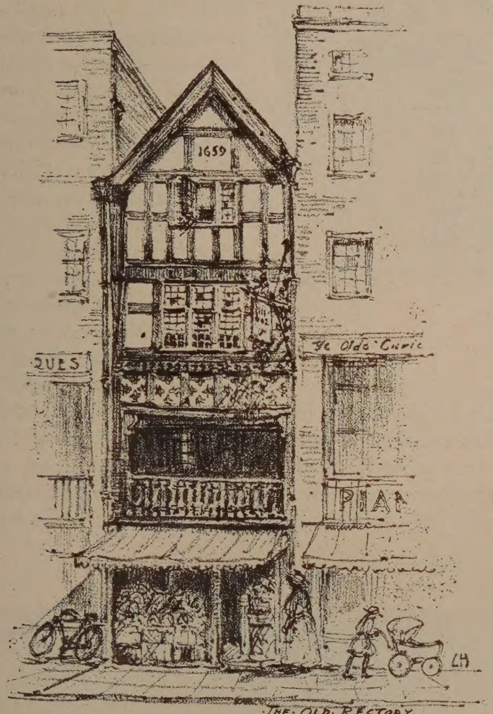
These details will suffice to explain the character and the purpose of the exhibits. Current phenomena of nature, the apparatus for studying them, and the means by which fundamental discoveries are applied for the public welfare will all be demonstrated in a changing exhibit, kept constantly up to date, and covering the whole range of the physical and biological sciences. A great Foucault pendulum, swinging in an invariable plane at the centre of the hall, will illustrate the rotation of the earth turning beneath it. Two small lead balls, drawn toward larger balls by their mutual attraction, will demonstrate the power of gravitation (the Cavendish experiment). A Nichols radiometer, when exposed by a visitor's touch to a bright light, will demonstrate the pressure of radiation, so feeble from even the most brilliant terrestrial sources, but so intense in certain stars that it tends to disintegrate them. The remarkable phenomena of the interference of light, and their use for the most minute and exact measurements of length or for the determination of the diameter of the stars; the beautiful structure and colors of crystals in process of formation, shown with polarized light; living infusoria, in their exquisite variety, swimming in a drop of ditch-water; growing colonies of bacteria; the phenomena of cell division and of artificial parthenogenesis—these are further examples of the exhibits in the central hall.

Capital in central hall.

The Architect-at-Large in England

By Lorenzo Hamilton, Architect

THE problem that confronts almost every scholarship man and free-lance architect touring England for the first time is how best to employ the few precious weeks allotted him by funds or by the sailing date of a certain ship. It would be well if every one faced with this alluring opportunity could sit down with a man of his own profession who had been over the ground, and lay out an itinerary and compile a list of hotels. For instance, if you land at Southampton and are to sail from Plymouth or London, you had best make a "circular tour" of England; if your boat sails from Liverpool and you land in the south, your route should be laid out so that you end up in the north. This, at least, will save you from doubling on your tracks and making a six-hour or longer train ride from London at the end of your sojourn. The "circular tour" has many things to recommend it, principally the fact that the architecturally important towns of old England lie in the shape of a rough horseshoe on the map, making this trip (with side trips to places off the beaten path) both logical and convenient. There are a great many of the old taverns and manors serving as hotels to-day, and a day or two spent in the atmosphere of their ancient oak beams and sturdy stone walls is well worth the extra expense involved. Among these are the "Old George" at Salisbury, the "Peacock Inn" at Rowsley, Whitehall Manor at Shrewsbury, and the "Lygon Arms" at Broadway. If you are in doubt as to where to put up, the English "trust houses" are usually clean and inexpensive.



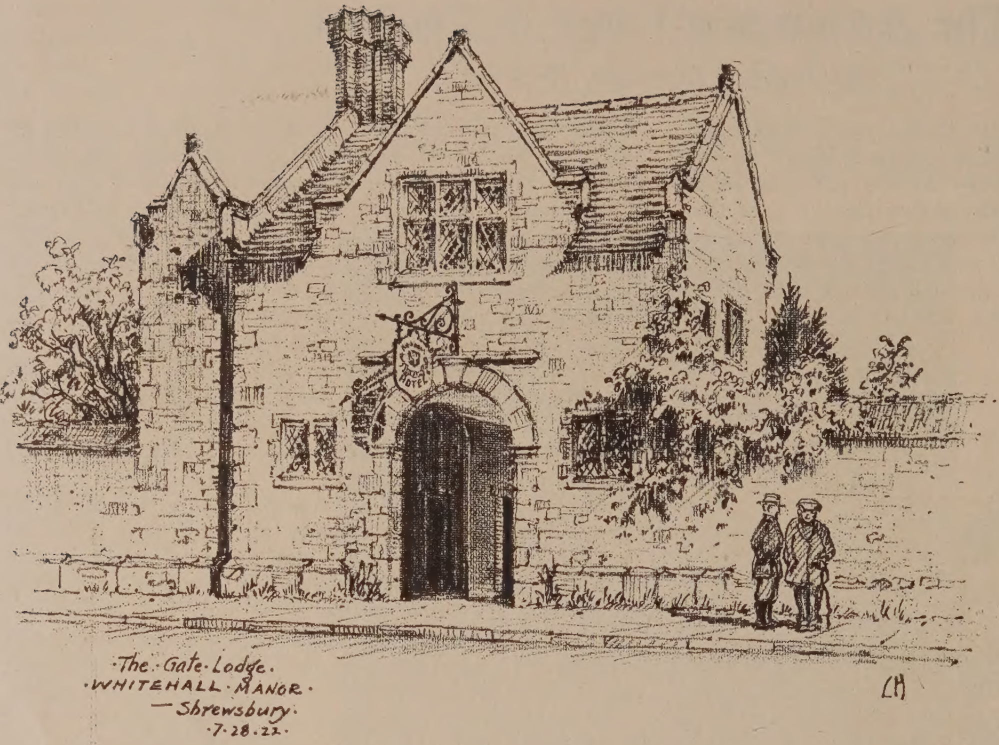
·THE·OLD·RECTORY.
·Chester.
—7.27.22.

Two other elements enter prominently into a sketching-trip in England—the expense and the weather. The pound sterling has so nearly recovered its former proud position that no time should be wasted in computing profits on the exchange, nor bargains in the shops of London; far better to bend your efforts toward becoming rapidly acquainted with Britain's cumbersome monetary system and discovering the meaning of "three bob, tuppence ha'penny" and the nice distinction between a guinea and a pound. Two years ago eight dollars a day was a safe minimum for living expenses and travelling the island in a modest way. Railway fares are quite as expensive as here in the States, and a bicycle is transported on a half-fare ticket. There is no second-class on the English railways, but only the most exacting will find fault with third. The old saying, heard so often on the Continent, that "only fools and Americans travel first-class" is somewhat exaggerated, but holds a good measure of truth.

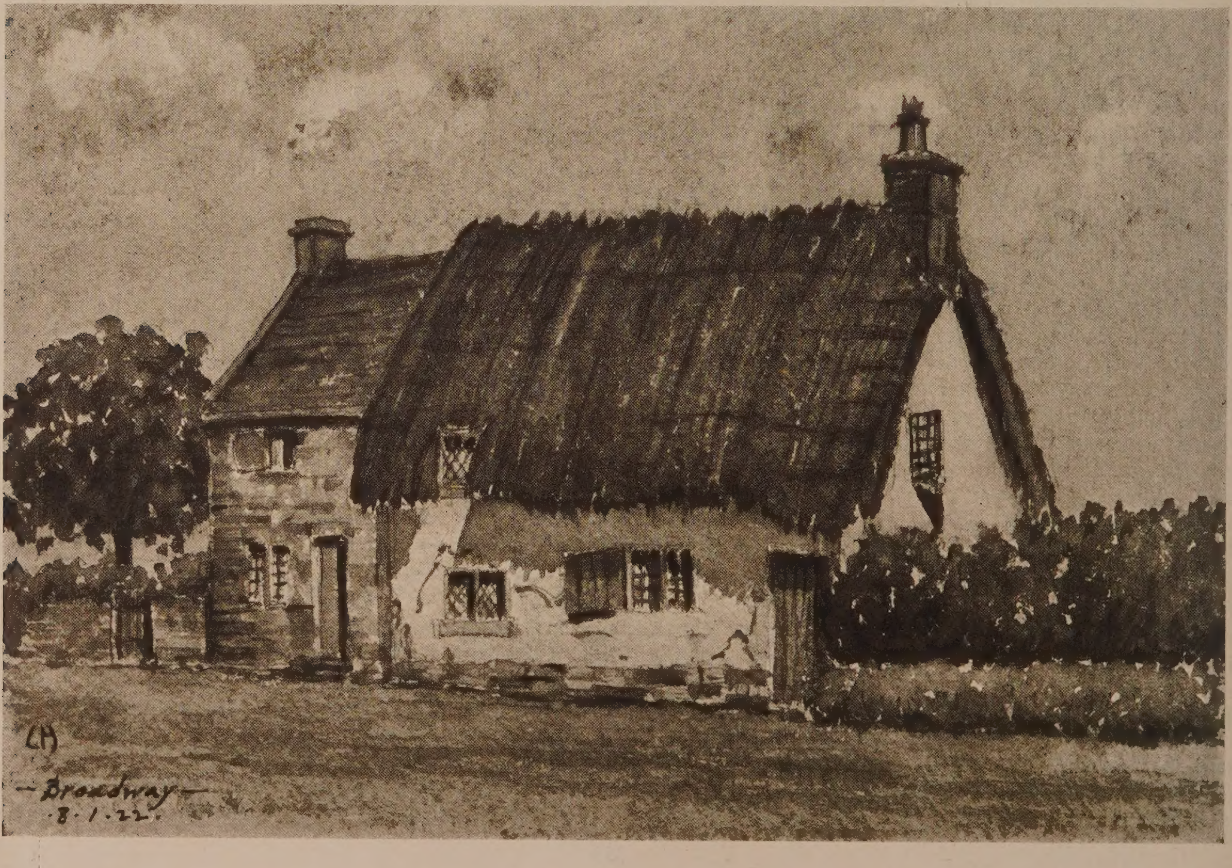
I have talked with "all kinds and conditions" of "architects-at-large," and very nearly all agree that, provided time allows, the bicycle is the ideal means of transportation in England. Every one "bikes" in England, not alone youngsters, but refined young ladies and heads of families; if bicycling is a lost art with you, do not despair because of the awkwardness of riding on the left hand side of the road; we discovered that this was far less deadly, even in London, than riding on the right hand side through the fair city of Paris, where your "bicyclette" seems to be a great electro-magnet, and all the taxis made of steel! A good English wheel equipped with the indispensable two-speed rear hub can be purchased very reasonably second-hand in London, and thus mounted, with your baggage strapped fore and aft, you can search out the gems of architecture in remote places almost inaccessible to automobiles or far from the railways. And last but not least, there is an indescribable joy of living to be gained from such a trip, and it will help to keep your health and spirits good. Of course, when you come to very long "jumps" between cities, I recommend the train. For saving time and physical energy, a small "motor car" has a lot to recommend it, particularly if you are travelling with a congenial crowd of three or four other fellows. In this connection you should bear in mind the high cost of "petrol" and the inevitable uncertainty about final sale of the car at sufficient return.

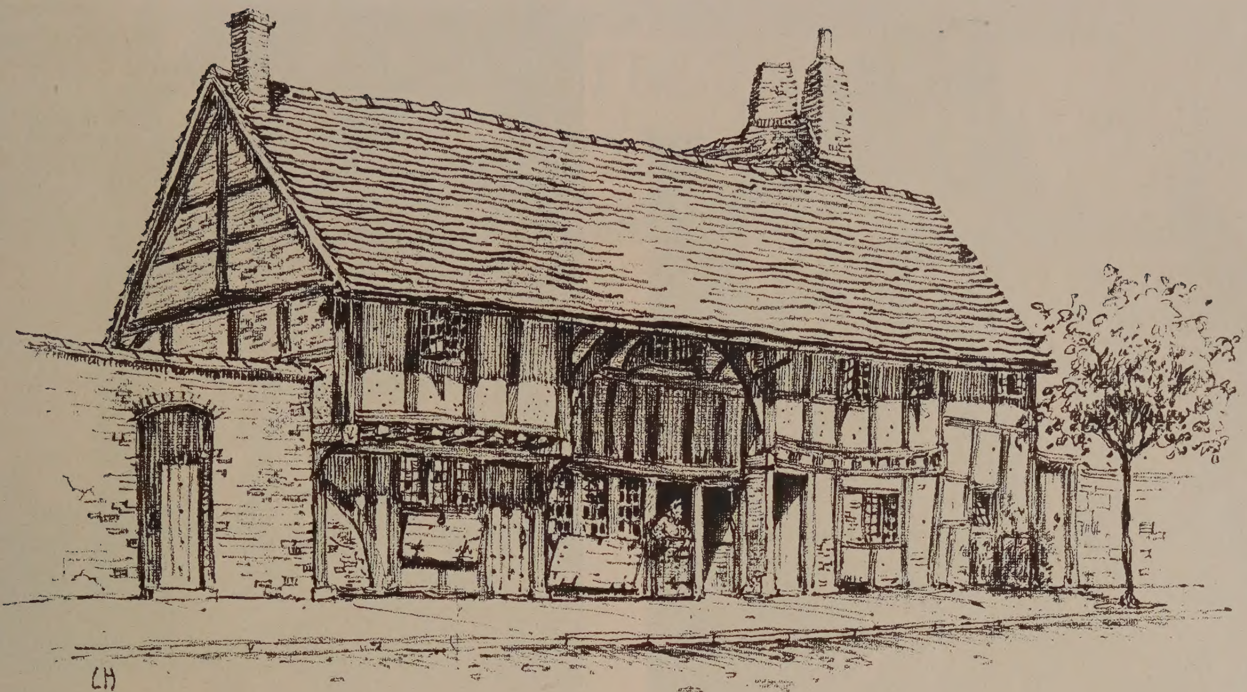
As to weather, the American revels in its fitful sunshine, curses its prolific rain, and ponders at the vagaries of a climate so fickle. The native dresses for the weather, and goes about his business in pouring showers with an indifference that excites your admiration. There seems to be a precedent against having fires in the fireplaces in summer despite the fact that the air may be as raw and penetrating in July as a New England November. Including a couple of sets of warm woolen underwear in your outfit will save you much discomfort and possibly sickness. Your costume may be as informal as you please, and your intentions as to mode of travel should be the determining factor; this article is not written for the youth who plans to spend his evenings dancing at the Cecil, so let your conscience be your guide as to formal clothes.

Lest the reader despair of finding the real subject of this haphazard article, let me conclude with a word about sketching. While many, better qualified than I, disagree, I believe strongly in keeping almost exclusively to one medium for the relatively short sketching trip; this medium should be the one you can handle the best. Pencil is ideal from many angles, and is surely the most convenient, while pen-and-ink is awkward out of doors, and water-color often

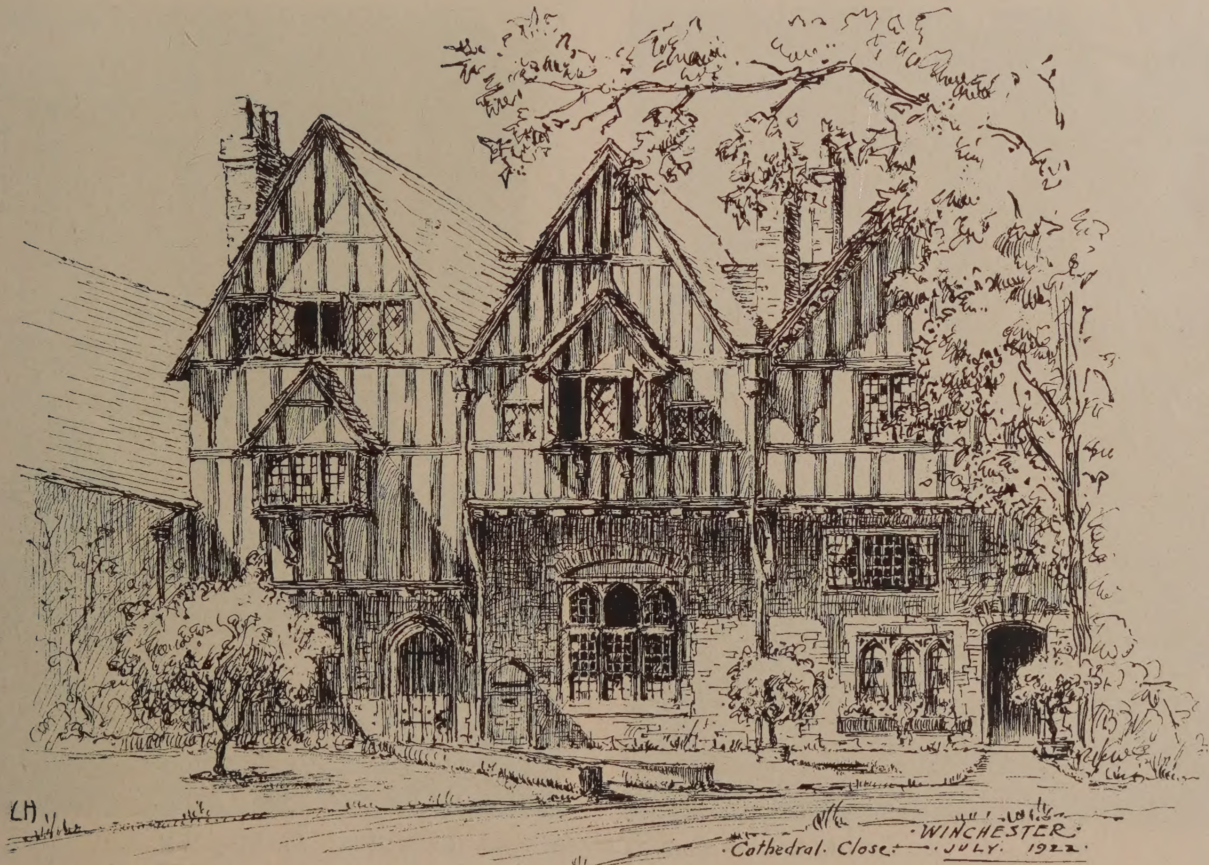


discouraging on account of England's fickle sunlight. If you have months to spare, I believe that the habit of many men in experimenting with every medium, even to lithography and etching, is very broadening, but even so, I doubt whether final results are ever as uniformly satisfactory as when a single medium is employed. Subjects for sketching are abundant in England; the quaint corners to be found in remote sections of London will appeal to some, while the sturdy Tudor manors and thatched roof cottages of the Cotswold will strike the fancy of others. No formula can be laid down, and I think that the average architect, despite his close-cropped hair and "tightness" of style, is somewhat temperamental. Therefore I do not subscribe to the hard-and-fast "sketch-a-day" rule that some of our colleagues set for themselves; sketching, even more than ubiquitous sightseeing, depends upon how a man feels. When you get a "kick" out of something (as the phrase goes), sit down and sketch, whether it be one of Wren's churches on the Strand, or a quaint half-timbered gable in the countryside; but woe unto the man who cramps himself into a cold corner with the mist blowing in his face and forces himself to sketch! When you are out of sorts, hie you to the nearest tea-shop and lay in a store of good English toast, jam, cake, and tea, and you will emerge a new man; and I wager that to-morrow's sketch will be infinitely better than that scrawl you made to-day!

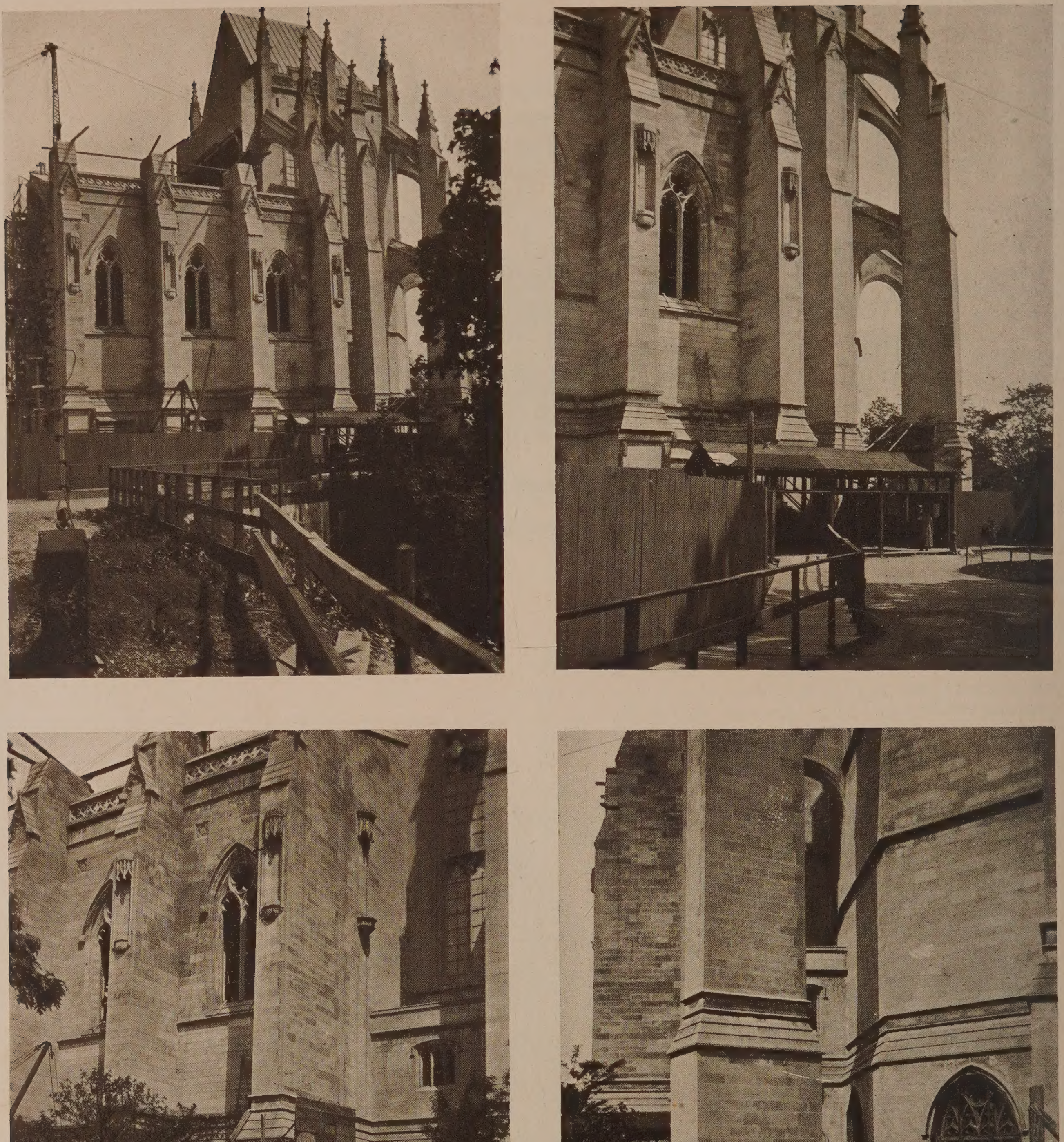




·MASONS' COURT·
·Stratford-on-Avon·
—7.31.22·



·WINCHESTER·
·Cathedral· Close·—·JULY· 1922·



DETAILS OF THE CATHEDRAL OF SS. PETER AND PAUL (EPISCOPAL), WASHINGTON, D. C.

Frohman, Robb & Little, Architects.

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* Reg. U. S. Pat. Office

Editorial and Other Comment

Mr. Goodhue's Last Completed Work

THE beautiful building of the National Academy of Sciences and Research Council that we present in this number was the last work completed by Mr. Goodhue, only a short time before the end of his career in the profession he had so greatly honored.

In many ways it is expressive of the invariable good taste, sound scholarship, fine sense of proportion, refinement, and distinction that pervaded everything he did. Whatever he undertook was permeated with his fine idealism and innate feeling for beauty. He achieved great things through no passing—and what is too often the ill-considered thing called—inspiration, but by patient development of an idea into something very definite and ordered in all its parts. He had not only the true artist's gift of creation, but as well the critic's doubt of himself that kept him ever looking to a perfection beyond himself.

Washington has many beautiful buildings—Mr. Bacon's superb Lincoln Memorial stands only a short few paces from this last work by Mr. Goodhue. If the latter in its nature lacks the monumental character of the tribute to the great emancipator, it still adds its distinguished element to the architecture of the city, and we wish that the name of its creator might be as familiar to every visitor as that of Mr. Bacon. We are so given to accepting our architecture as a matter of fact. How few of the thousands who visit Washington are interested in knowing the names of the architects. They go to the National Gallery, the Corcoran, the Freer, and carry away with them impressions of famous pictures, talk of this Inness and that Sargent or Whistler, but how few indeed remember the names of the men, for instance, who designed the Capitol, the Freer Gallery, the Pan-American Building! Shall we even say—the Lincoln Memorial?

There is too little said in our newspapers and reviews about architecture on its artistic side, often too much about the cost and the real-estate values.

We should like it made known so all might read and remember as an object lesson in the study of the mother of the arts that we owe the beauty, dignity, and appropriateness of the building for the National Academy of Sciences to Bertram Grosvenor Goodhue. His name is writ large, in the minds of those who know his accomplishments, in the work he has left us as a precious heritage. His name and others who have done so much to distinguish American architecture should be as familiar to lovers of the arts as those of the men who have given fame and glory to American painting. What a pity that he could not have lived to see the completion of the great Nebraska State Capitol. How varied and catholic was his taste, how fine his judgment in the use of his knowledge. It will be several years before the Nebraska Capitol will be completed, but those who have seen the drawings think of it as one of Mr. Goodhue's boldest and most original designs. In departing from the conventional domed type, he has set an example that will no doubt be followed by others. It took courage and vision to take a chance in such a radical departure from the traditional idea of a capitol, with large sums to be won or lost in entering the competition.

In the Science Building, as in other work by him, Mr. Goodhue was fortunate in having the co-operation of Mr. Lee Lawrie in the designing of the sculpture.

Better Late Than Never

IT is, of course, a pity that the zoning idea was not born years ago, before so many of our cities and towns had followed the go-as-you-please way to congestion, destruction of many local values, and indifference to growth in population. In our mad rush to get there immediately we are inclined to see only the value of progress as indicated by swift and unimpeded growth. The idea of expansion, of size, has submerged the thought of the future and of fitness. Zoning has come to the rescue of many cities on the way to destruction, and brought an appreciation of the fact that the entire community's welfare is more to be considered than the aggrandisement of the individual at the public's expense.

No more striking example of the benefits of zoning can be studied than New York City. For years the unrestricted high buildings down-town have encroached upon the light and air.

This is true in a measure of all large cities, but happily some of them have had more latitude than that offered by Manhattan Island.

New York owes to its zoning laws a new architecture, as well as more wholesome spaciousness. Even the casual observer of new buildings, especially up-town, is struck with the setbacks that have broken up sheer walls into picturesque terraces and offered all sorts of ingenious ways of making the upper stories sightly and architecturally interesting. Zoning legislation has spread rapidly, and according to a late report from the Division of Building and Housing of the Department of Commerce:

"Approximately 24,000,000 people, living in 261 municipalities throughout the United States, are enjoying the benefits of zoning. The greatest zoning centre is in the territory in New York State and northern New Jersey having New York City for its hub; other centres are in California, Ohio, Massachusetts, Illinois, and Wisconsin.

"Secretary Hoover, in a recent statement, characterized properly drawn zoning ordinances 'as reasonable, neighborly agreements as to the use of land.' They divide a city into districts in which is limited the use to which land and structures may be put; the height and number of stories of the buildings; and the areas of the lots to be occupied by the buildings. Their professed object is to regulate the use of private real estate for the purpose of promoting health, safety, morals, and the general welfare of the entire community.

"That the idea has made a strong appeal to the American people is shown by the rapid spread of zoning. On January 1, 1923, there were only 129 zoned cities, towns, and villages. The first comprehensive effort to zone was the passage of a zoning ordinance by New York City, in 1916; although Los Angeles, Calif., passed a 'Use' ordinance in 1909, and Boston, Mass., regulated the height of buildings in 1904.

"Cities, towns, and boroughs throughout the country generally are showing more than a passing interest in zoning. Where authority is granted, various municipalities are actively engaged in the solution of their zoning problems with enthusiastic zoning commissions and auxiliary committees at work. Even where state legislation does not authorize zoning, various public-spirited and progressive organizations are studying the local situation so that when zoning can be effected legally, much of the preliminary work will be finished.

"New Jersey leads in the number of zoned municipalities, having 66; New York has 41; California has 33; Illinois, 25; Massachusetts, 24; Ohio, 16; Wisconsin, 13; Indiana, 5; Michigan and Missouri, 4 each; Iowa and Rhode Island, 3 each; Florida, Michigan, Oklahoma, Pennsylvania, Virginia and Washington, 2 each; and Arkansas, Colorado, Connecticut, Georgia, Maryland, Nebraska, North Carolina, North Dakota, South Carolina, Tennessee, Utah, and the District of Columbia, 1 each.

"The complete list of zoned municipalities can be secured from the Division of Building and Housing, Department of Commerce, Washington, D. C."

The Death of Albert J. MacDonald

IT is with the most sincere regret that we record the recent sudden death of Mr. MacDonald, the editor of *The Architectural Forum.* He was a young man of fine qualities, with a high appreciation of his responsibilities in his chosen field of journalism, a generous and fair competitor, whom it was always a pleasure to meet in friendly discussion. His work on behalf of the architectural profession was inspiring and marked with good taste and high ideals.

For the Preservation of the Beautiful Tower of Madison Square Garden

DEAR EDITOR: I read your editorial in the September number on "Architectural Cannibalism" with much interest and liked especially what you said about the tower of Madison Square Garden, the lovely Diana, and your suggestion for the preservation of the old Herald Building. May I offer this further suggestion regarding the possibility of preserving the tower and of placing it somewhere as a worthy memorial?

Have the tower rebuilt in some up-town square or plaza as a campanile or memorial tower—with a set of chimes and clocks on its four faces. Such a tower would make a prominent mark in the upper parts of the city, where the competition for height is not so marked. To me it is as fine, if not finer than the famous La Giralda in Seville, from which it was inspired. The original stands out across the city, and the views across the Guadalquivir are superb, and to hear its bells chiming from across the river is a delight not soon to be forgotten. In France things seem to be managed in a better way than in America concerning such works of art as have passed their usefulness. The Society of Historic Monuments puts an architect in charge, and the government finds a local use for them.

Most English cities have a memorial in the form of a spire or tower, and very often this is located in such a way that the main avenues and streets lead up to it. At night the illuminated clock dials enable every housewife in the city to be sure of setting her own clock right.

It seems to me that every member of the profession might do his part in calling the attention of some of our public-spirited men to the need of saving this beautiful monument which has become such a part of the life of the people of the city of New York. The Sub-Treasury Building has been saved by a citizen who deserves the thanks of every person in New York. The profession has saved and looks after the City Hall, and no doubt there are many other efforts of this nature that do not occur to me at this time. The author suggests that Messrs. McKim, Mead & White, the firm of architects who designed the building, be placed in charge of the supervision of its demolition, transfer, and erection according to the original drawings.

Mr. White used to say, and he laid particular stress on it, that the tower was the real thing, and he was right.

In any case, I trust that Diana will be saved and placed, if not in the Metropolitan Museum of Art itself, in a grassy courtyard of the building as another example of the work of our great sculptor, the late Augustus Saint Gaudens. There it would live in company with the lovely pediment of the Madison Square Church, also the work of the same able artist who created the Garden.

WILLIAM T. L. ARMSTRONG.

Bad Weather No Excuse for Stopping Building Construction

BUILDING construction can be carried on in inclement weather with much the same facility that good weather affords, according to the findings of a survey conducted by the Department of Commerce under Secretary Hoover to determine why building could not be continued the year round.

The survey by the Committee on Seasonal Construction in the building industries was an outgrowth of the President's Conference on Unemployment, whose purpose is to stimulate employment, to eliminate waste, and to reduce costs.

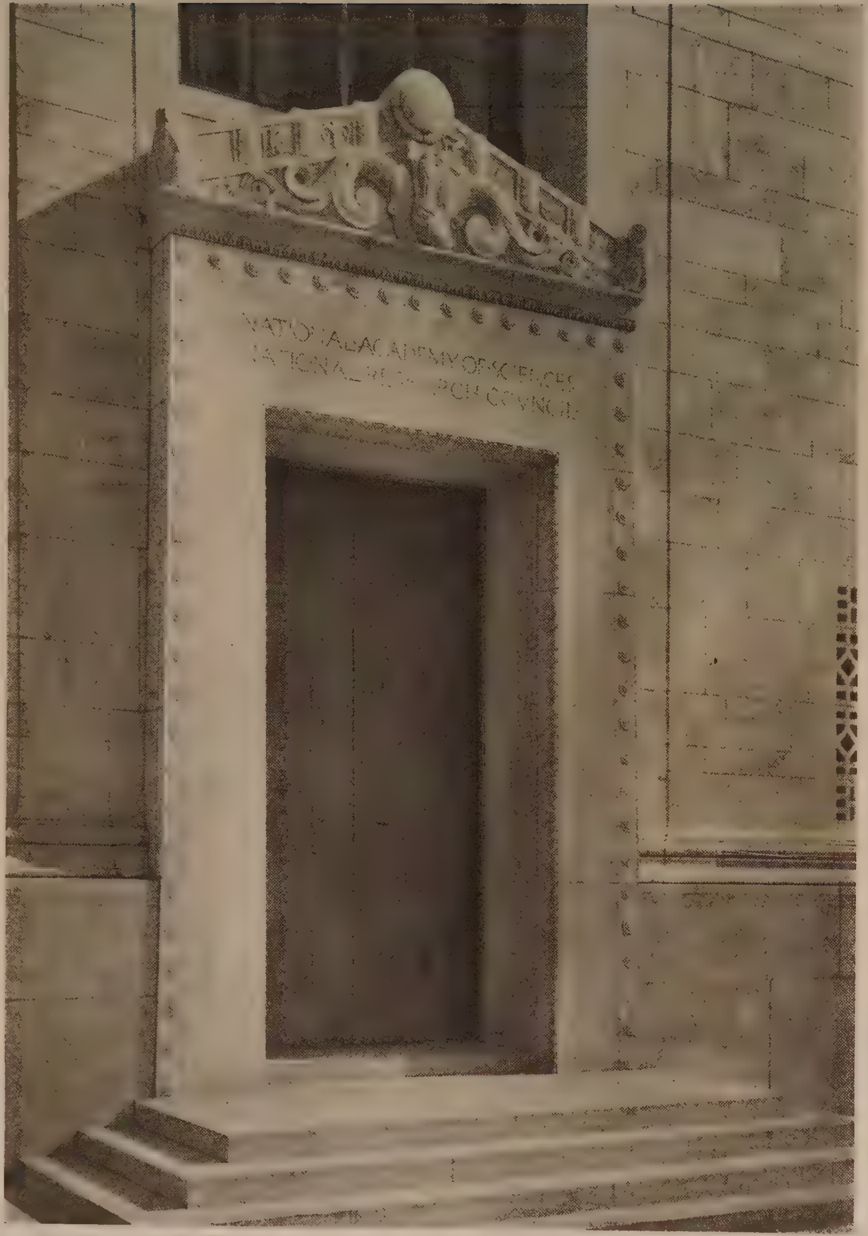
This continuance of work in all seasons, the report says, is made possible to a great extent because of improved methods and materials in construction.

"Before steel was so generally used as a principal structural material," the report states, "high masonry walls, which the steel frame has in part replaced, or which as non-bearing walls may now be thinner, were not often attempted in cold weather, because of many uncertainties introduced; and much building therefore was crowded into a short period.

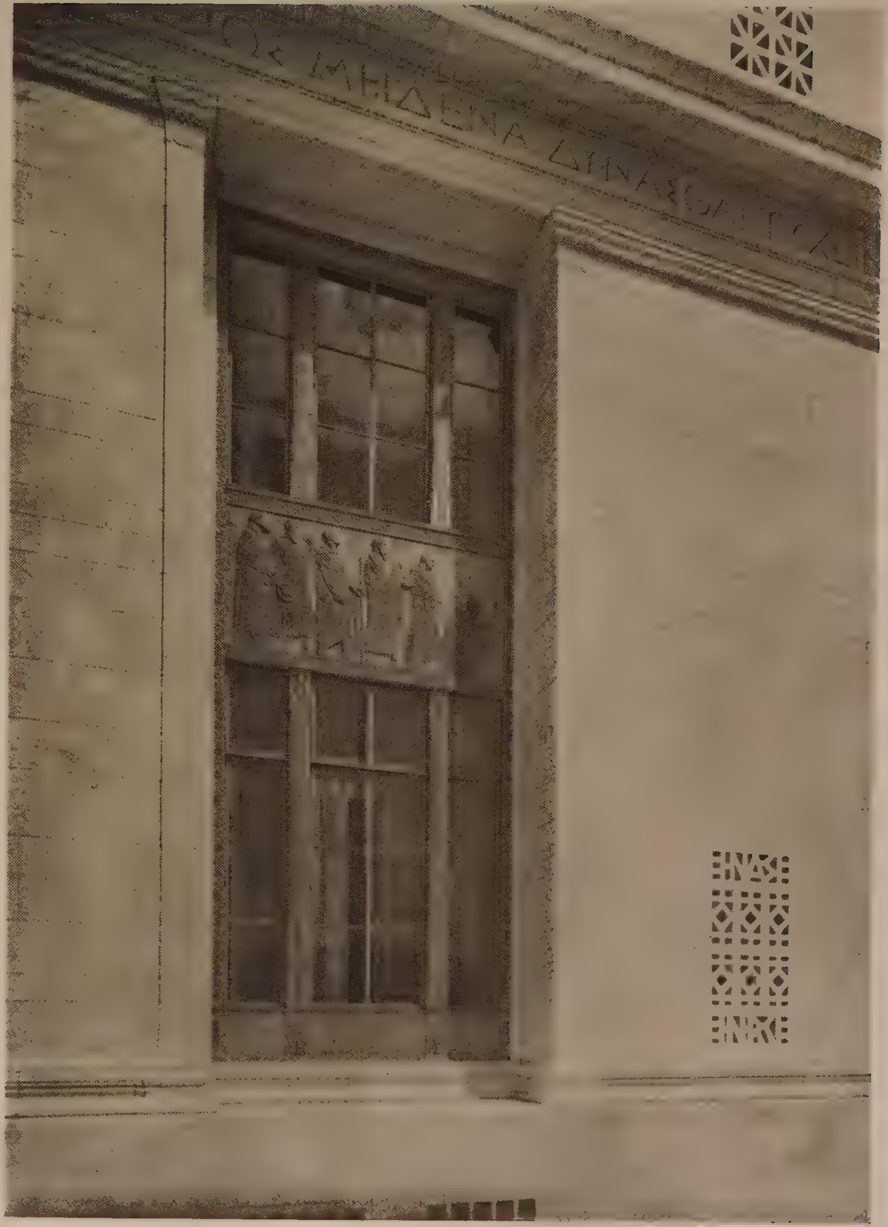
"Steel frames not only provide independent support for panel walls and floors, but also for suspended scaffolds and for canvas or other temporary shelters which make it possible to complete the structure without great regard to bad weather.

"An interesting development in this field came about through requirements that steel-framed floors be planked over for the greater safety of the workers below, and for pedestrians. Economy prompted installation of permanent floors instead; and protection from rain and snow is thus obtained early in the work. The enclosure walls, which formerly preceded the floors, are now built after them."

Individuals concerned with building are urged to do their share in contributing to all-year-round building operations by scheduling new work and repair work at a time when the pressure of general building is not at its height.

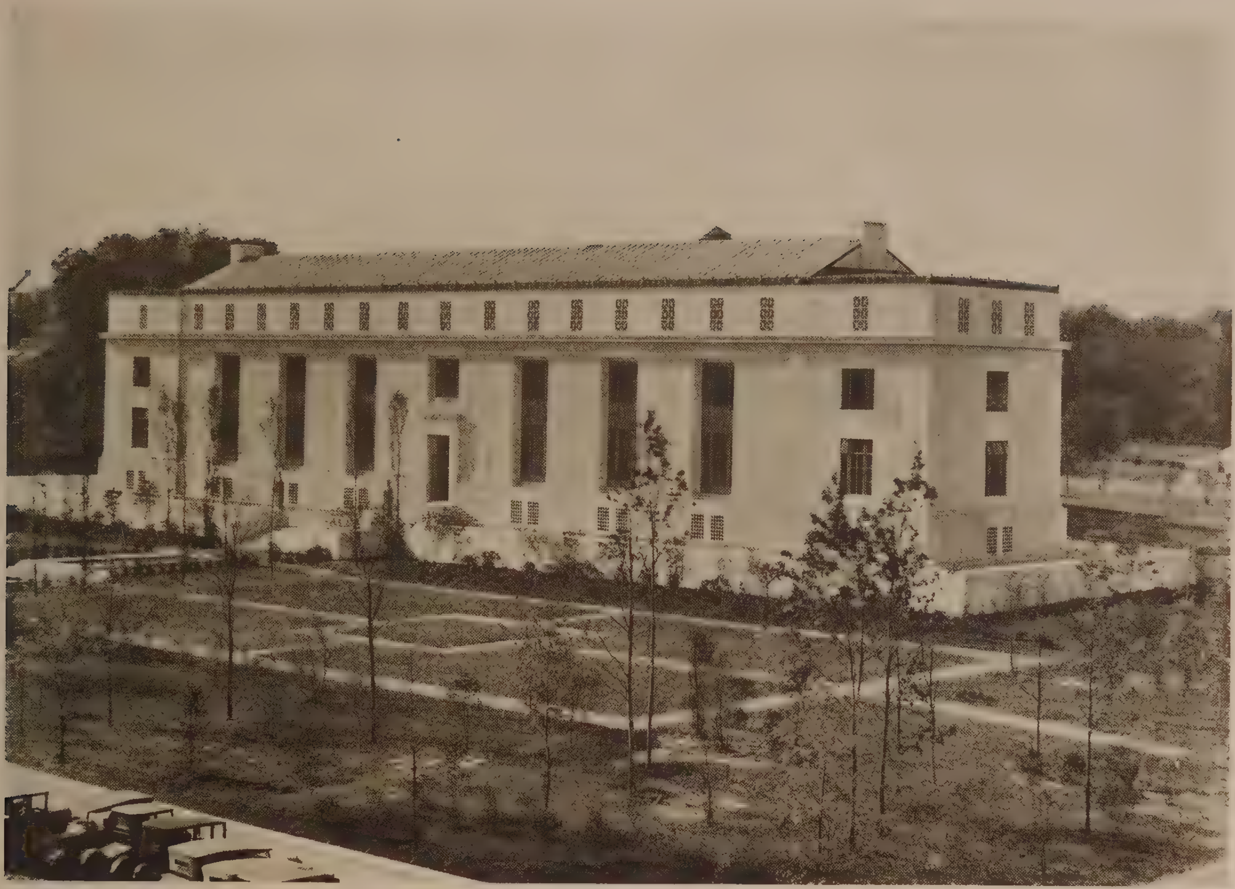


MAIN ENTRANCE DETAIL.

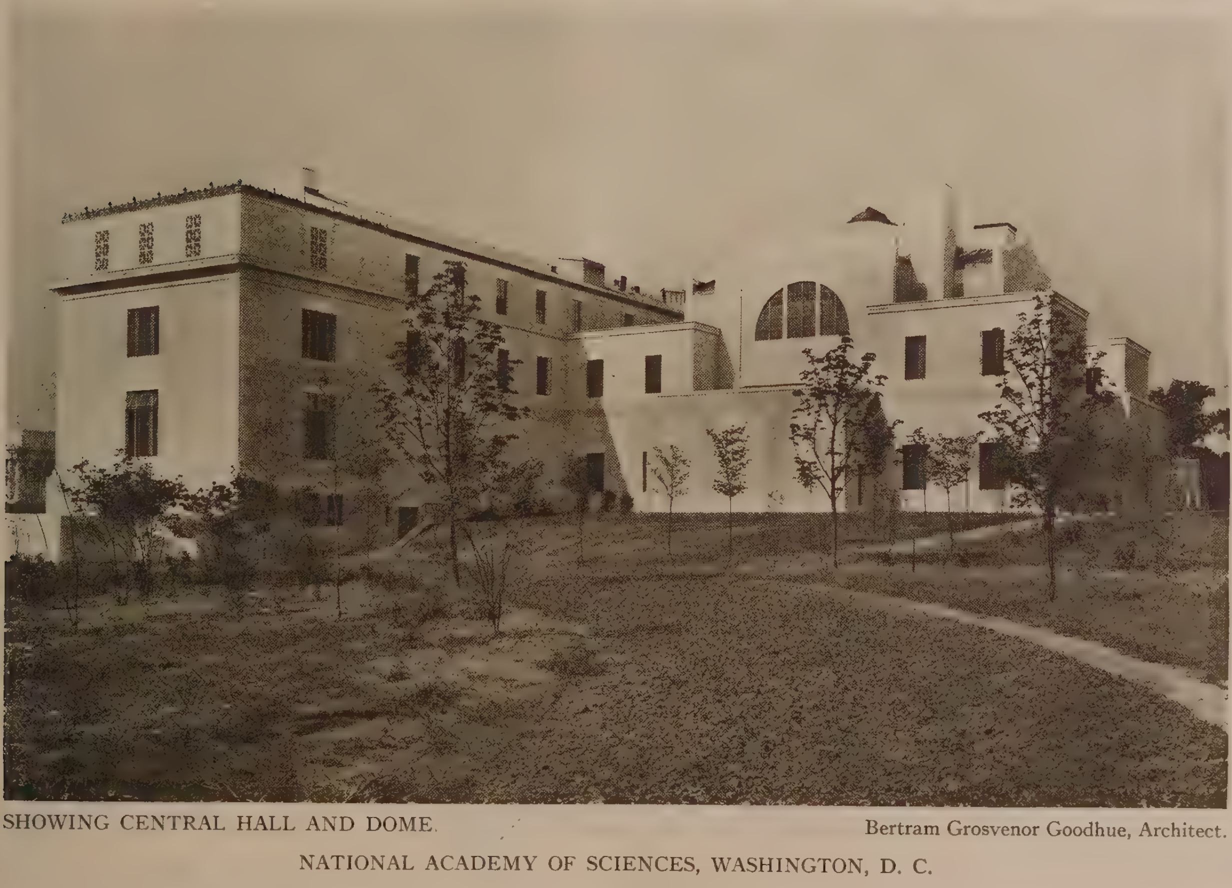


DETAIL OF WINDOW AND SCULPTURED PANEL.

NATIONAL ACADEMY OF SCIENCES, WASHINGTON, D. C.
Bertram Grosvenor Goodhue, Architect.



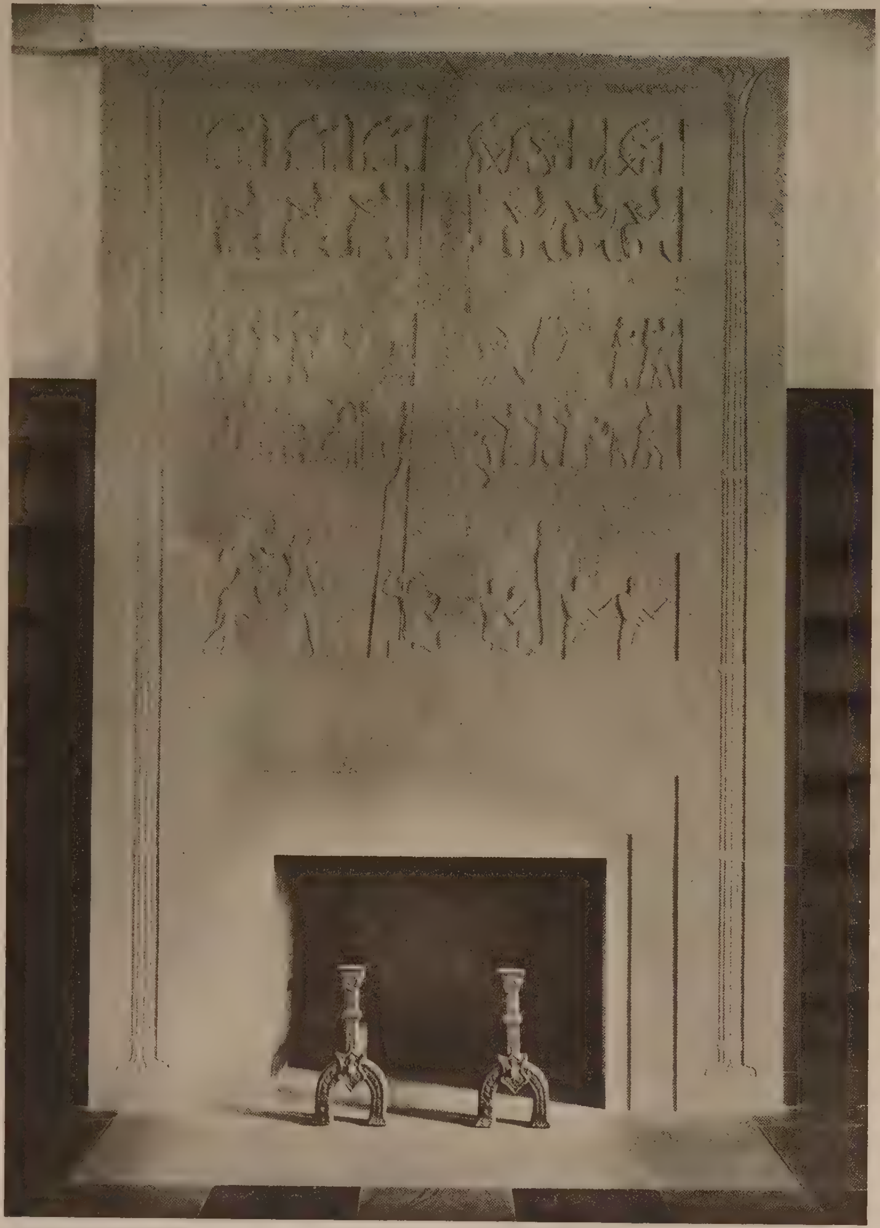
MAIN FAÇADE.



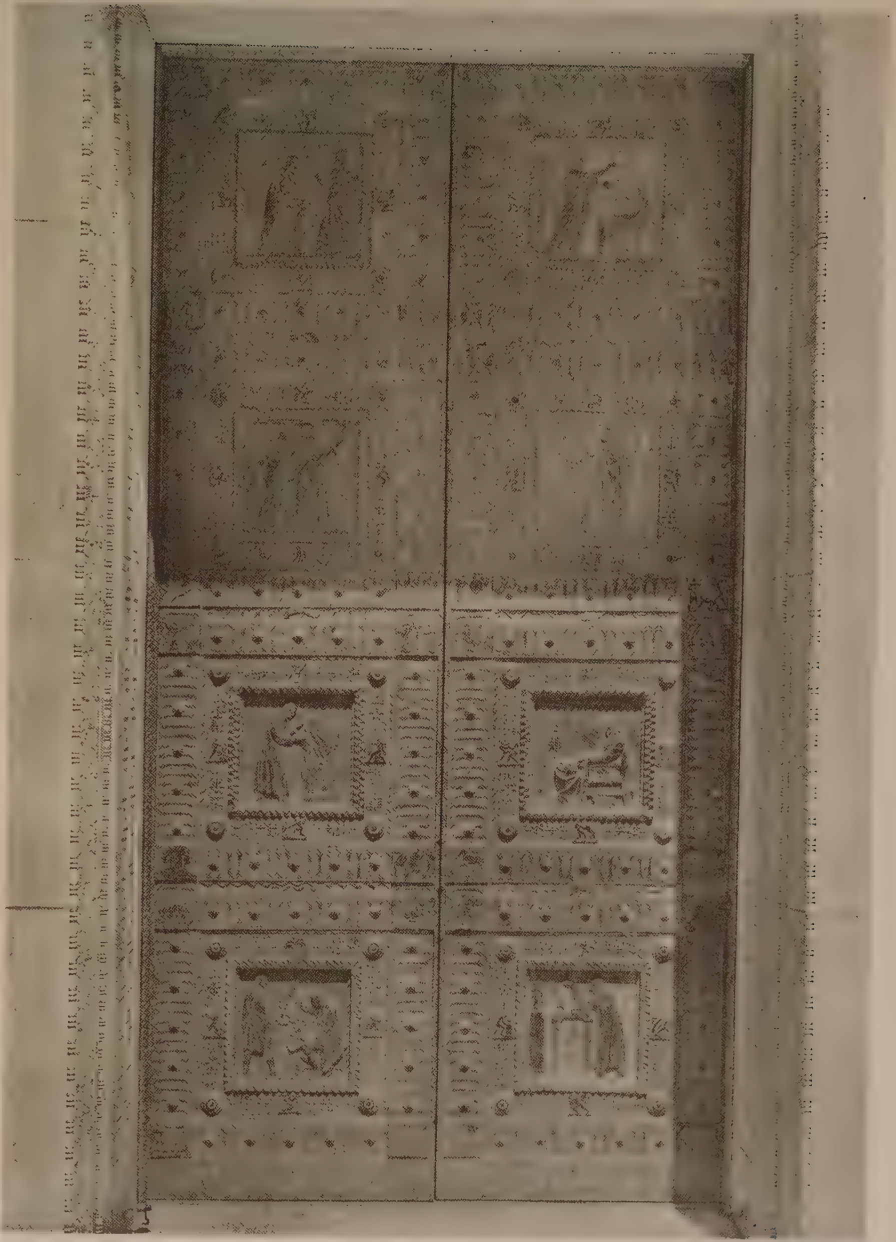
SHOWING CENTRAL HALL AND DOME.

Bertram Grosvenor Goodhue, Architect.

NATIONAL ACADEMY OF SCIENCES, WASHINGTON, D. C.

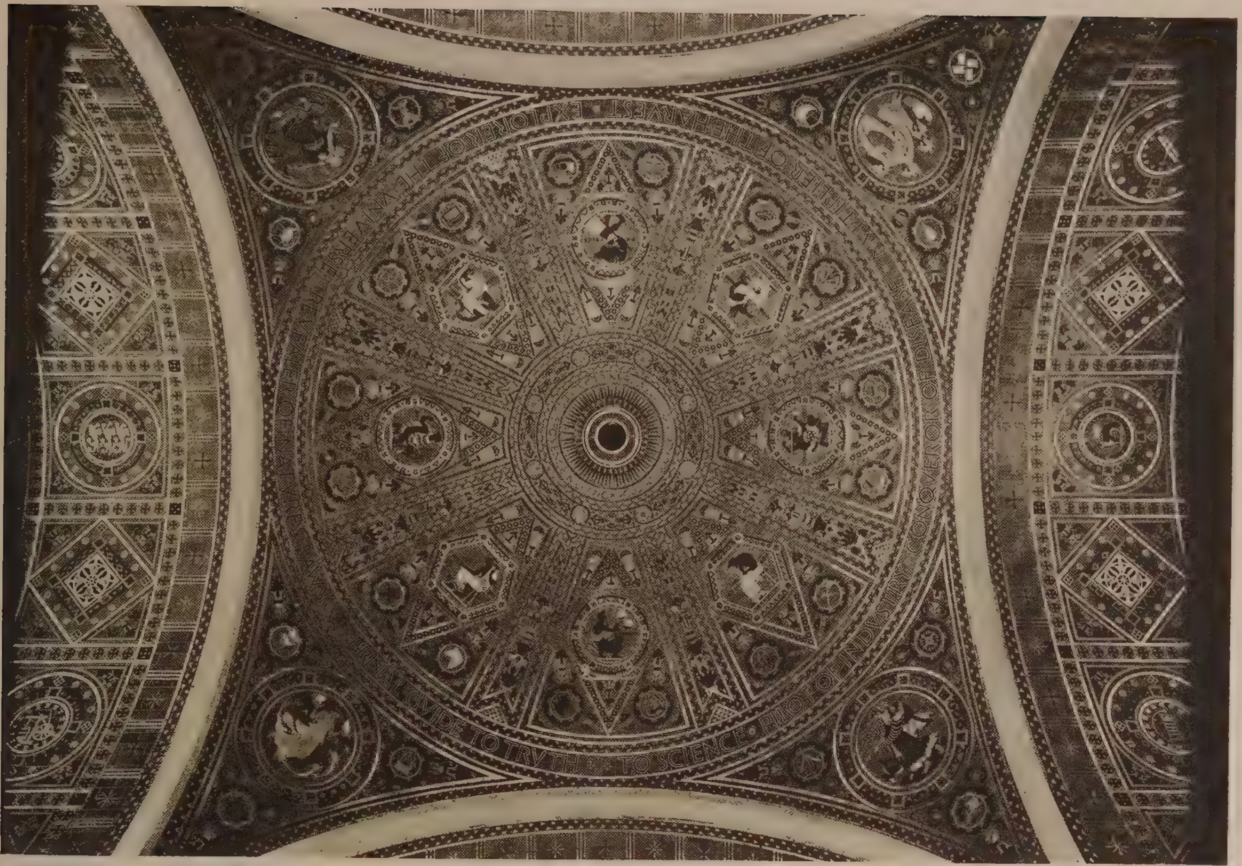


FIREPLACE IN THE LIBRARY.

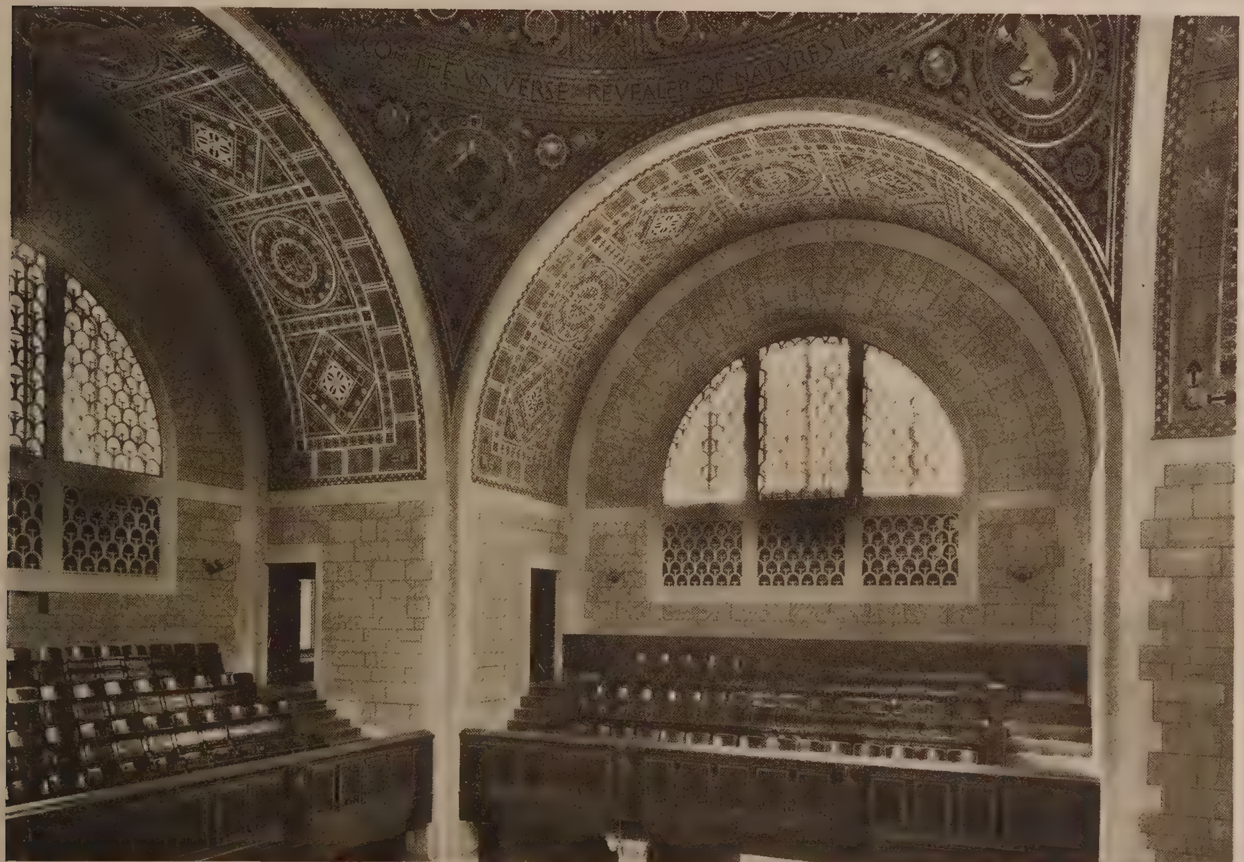


BRONZE DOOR AT MAIN ENTRANCE. Bertram Grosvenor Goodhue, Architect.

NATIONAL ACADEMY OF SCIENCES, WASHINGTON, D. C.

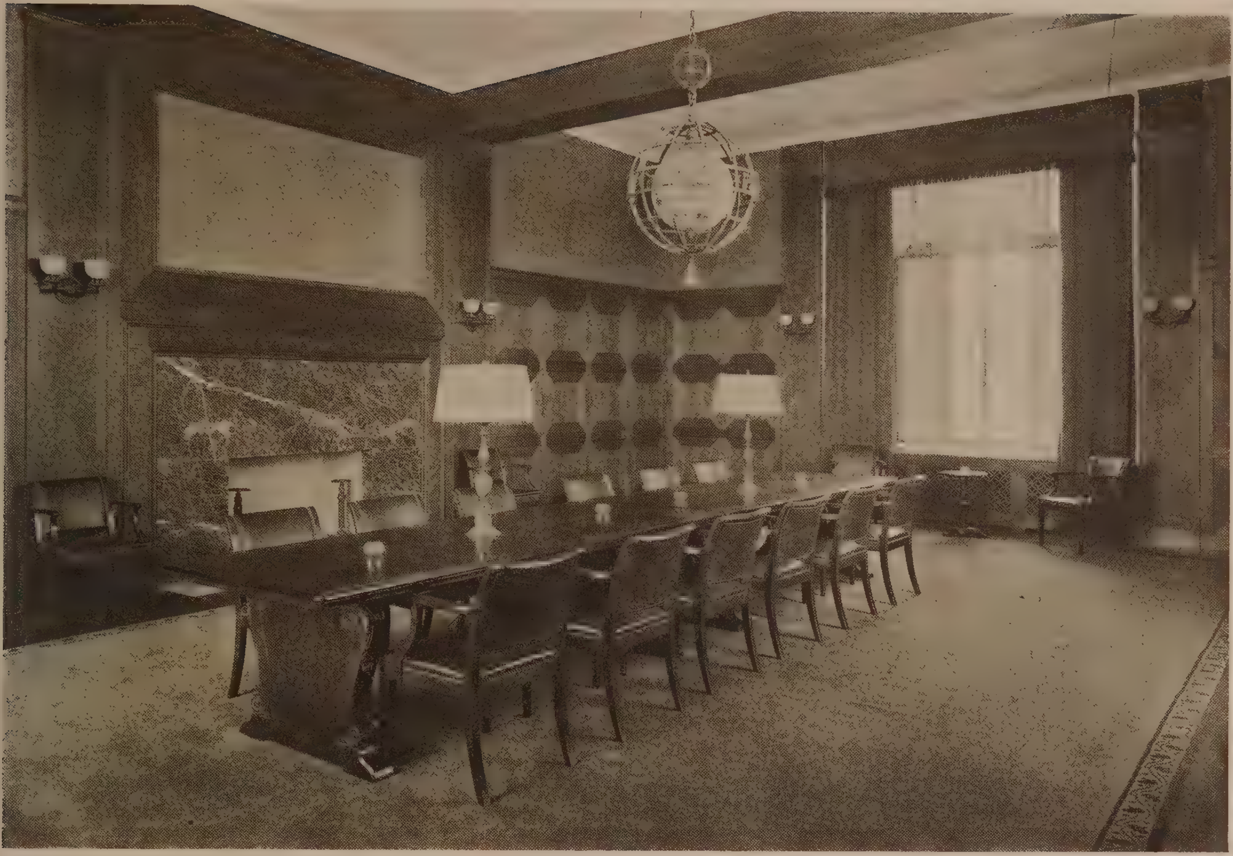


CEILING, CENTRAL HALL.

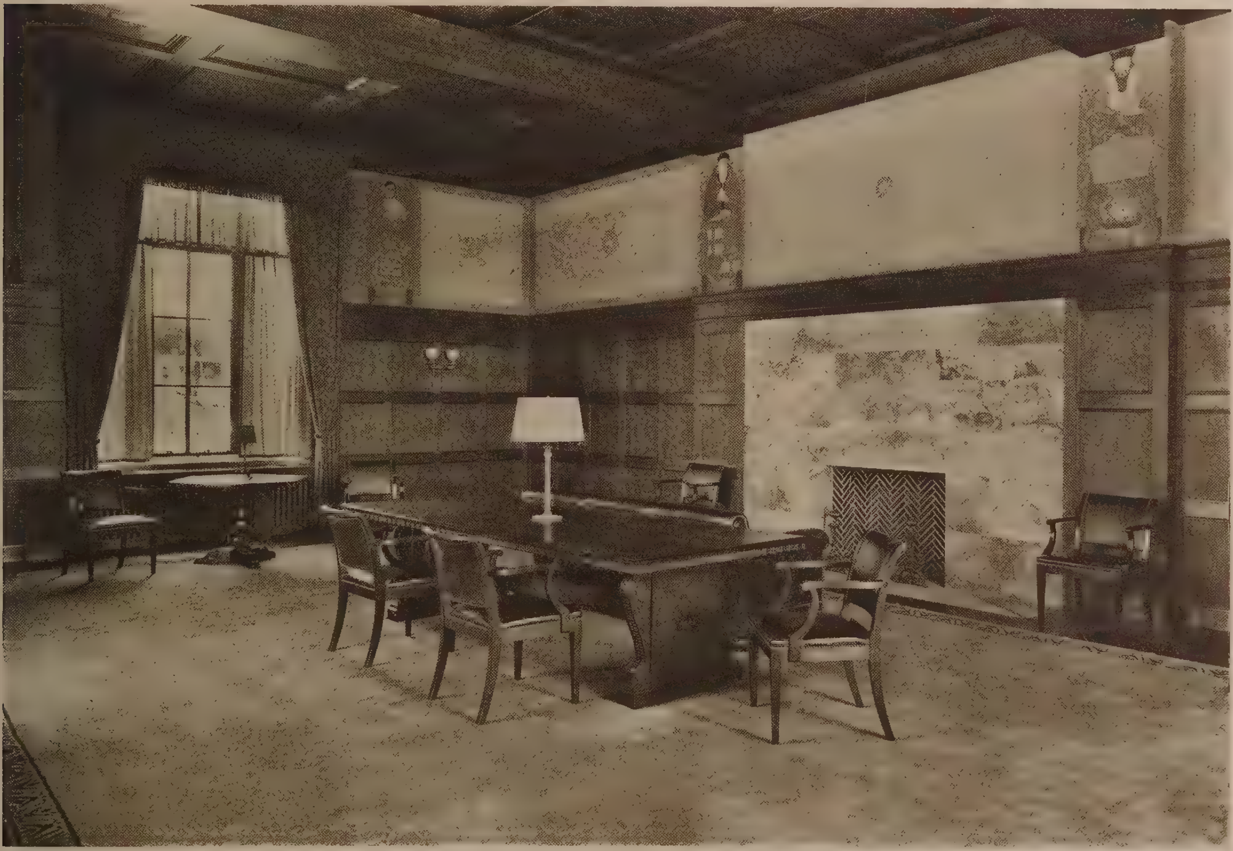


CENTRAL HALL, SHOWING GALLERIES AND SUPPORTING ARCHES OF DOME.

NATIONAL ACADEMY OF SCIENCES, WASHINGTON, D. C.
Bertram Grosvenor Goodhue, Architect.



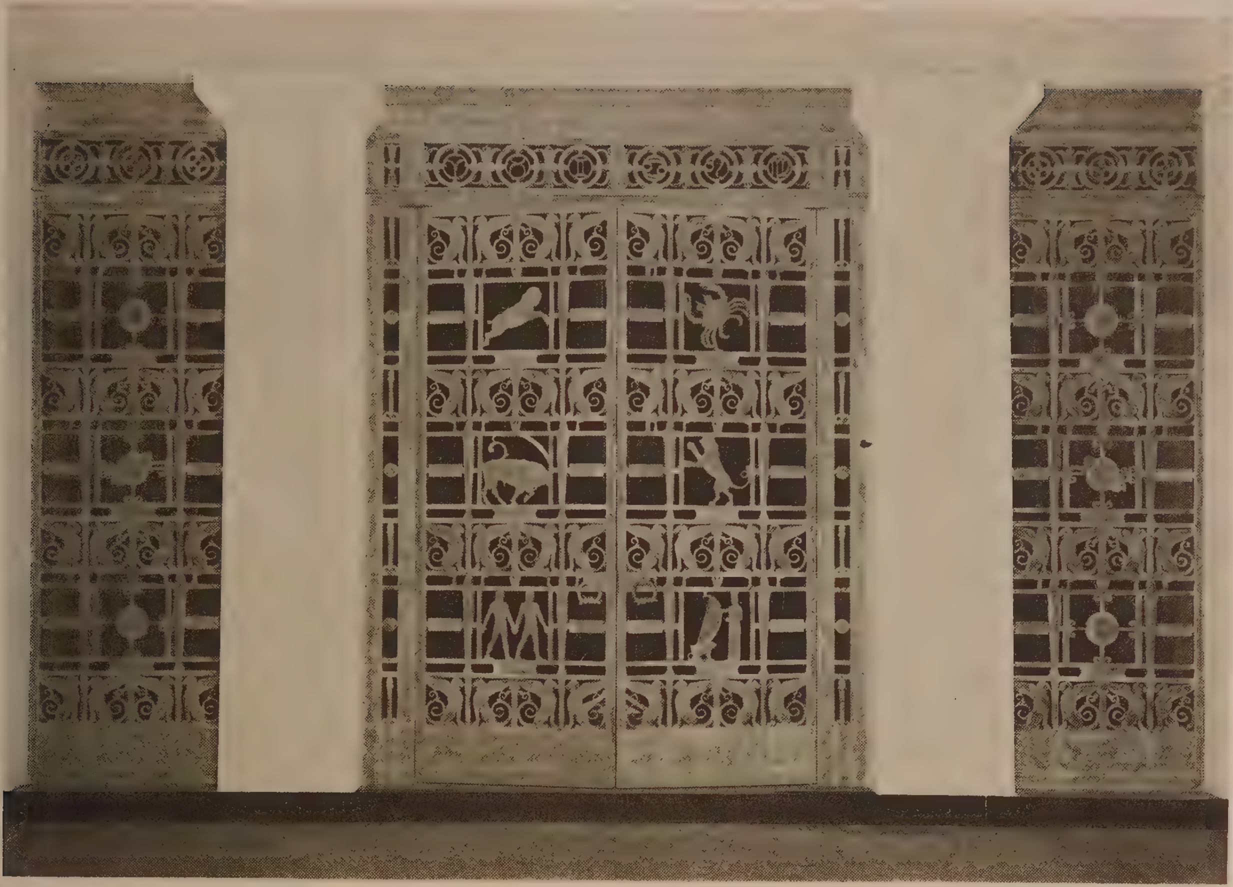
MEETING-ROOM.



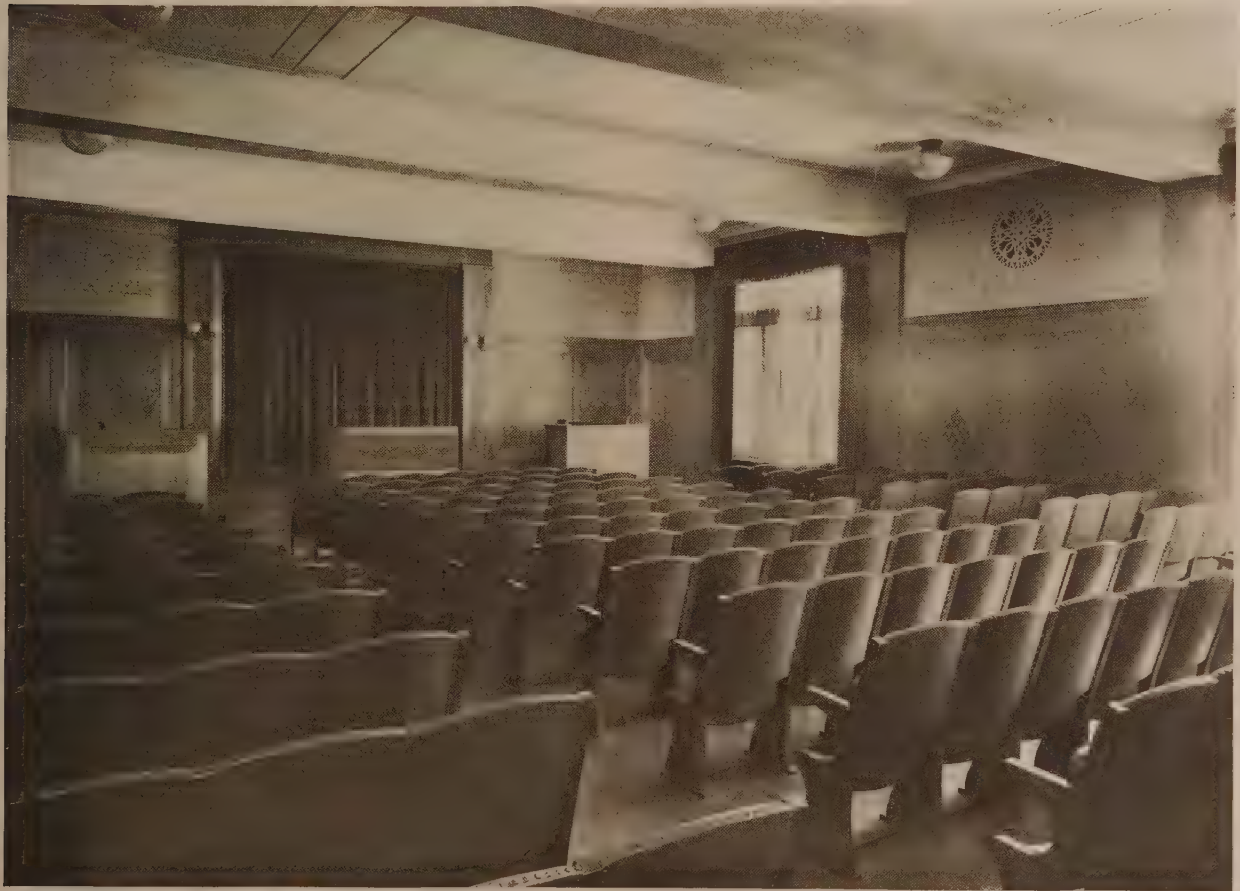
READING-ROOM.

Bertram Grosvenor Goodhue, Architect.

NATIONAL ACADEMY OF SCIENCES, WASHINGTON, D. C.



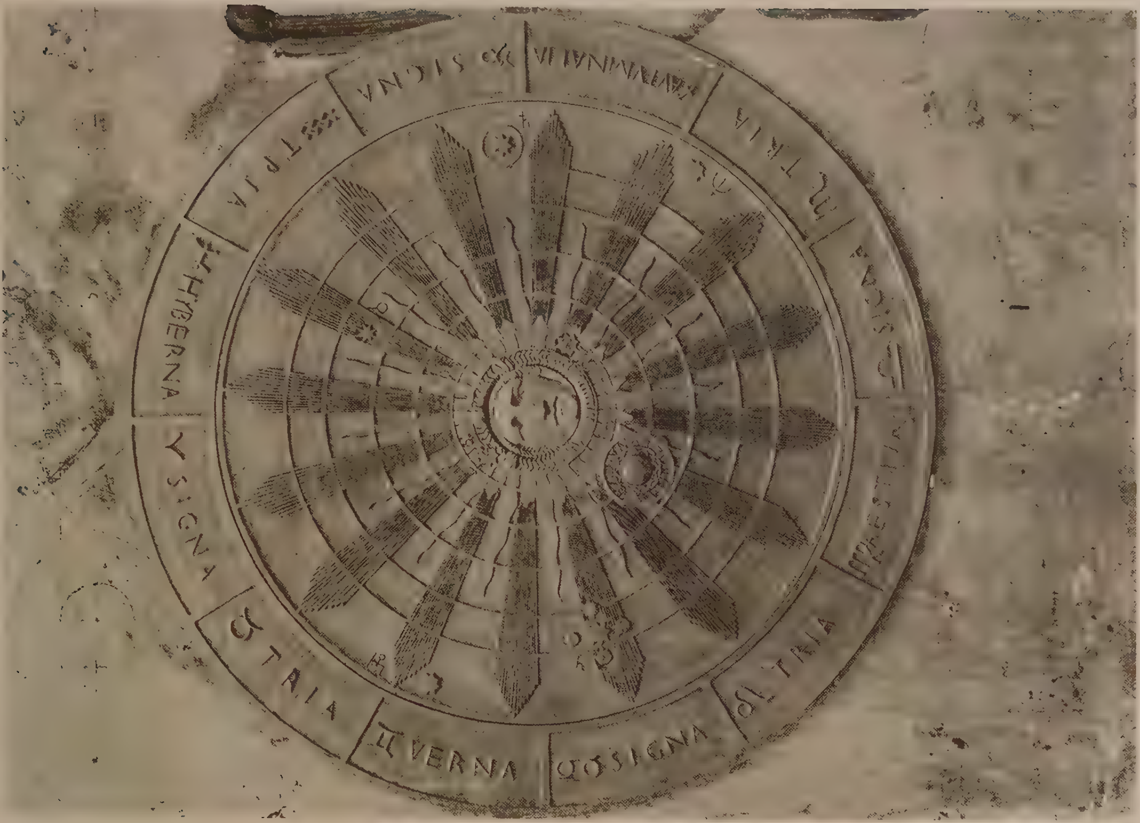
GRILLE AND DOORS TO CENTRAL HALL.



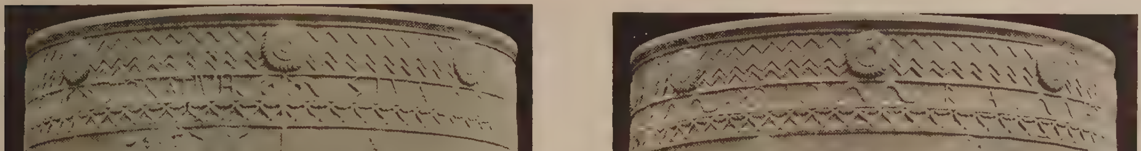
LECTURE-HALL.

Bertram Grosvenor Goodhue, Architect.

NATIONAL ACADEMY OF SCIENCES, WASHINGTON, D. C.



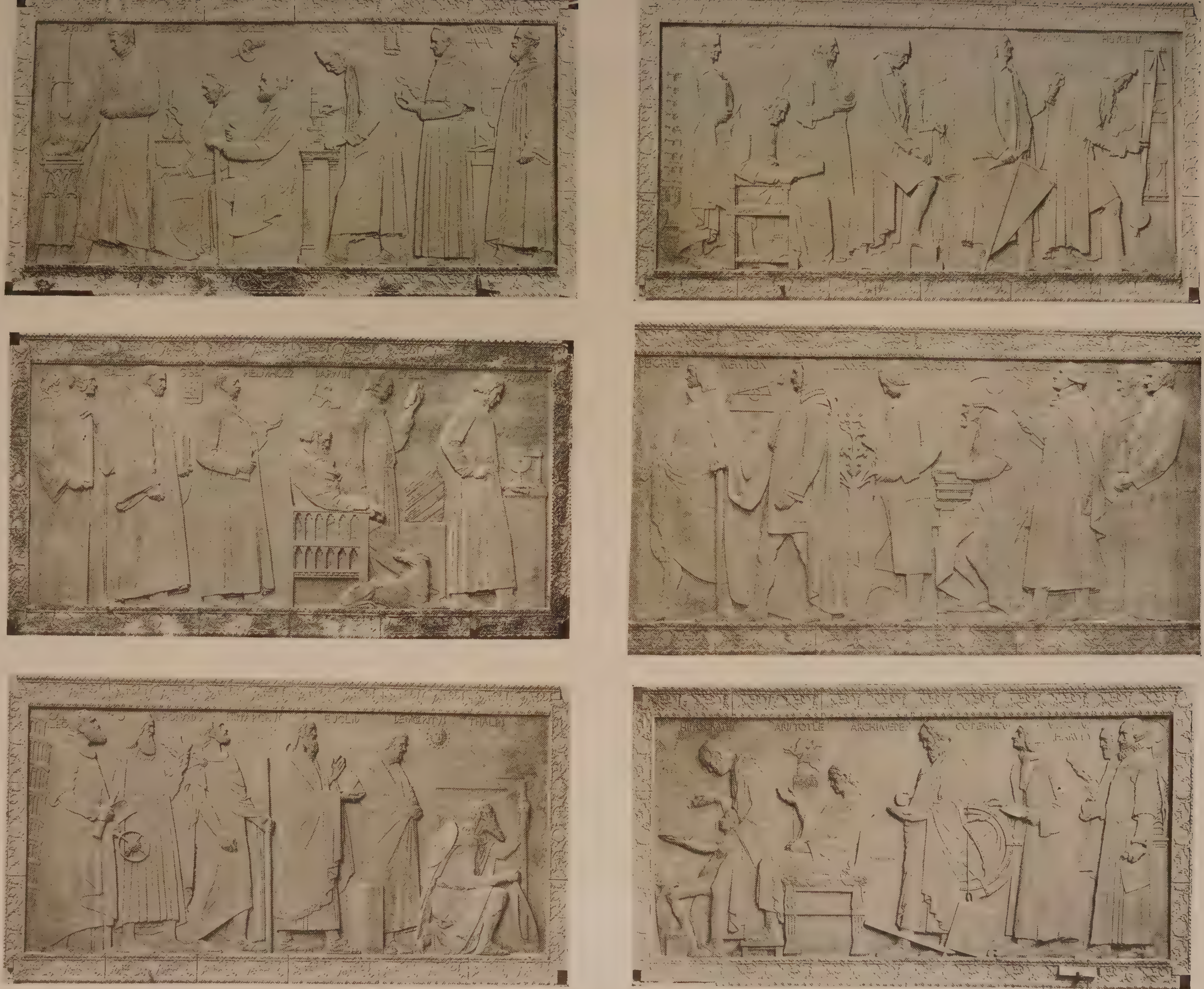
SPECTOGRAPH.



SPECTOGRAPH–CASE.

Bertram Grosvenor Goodhue, Architect.

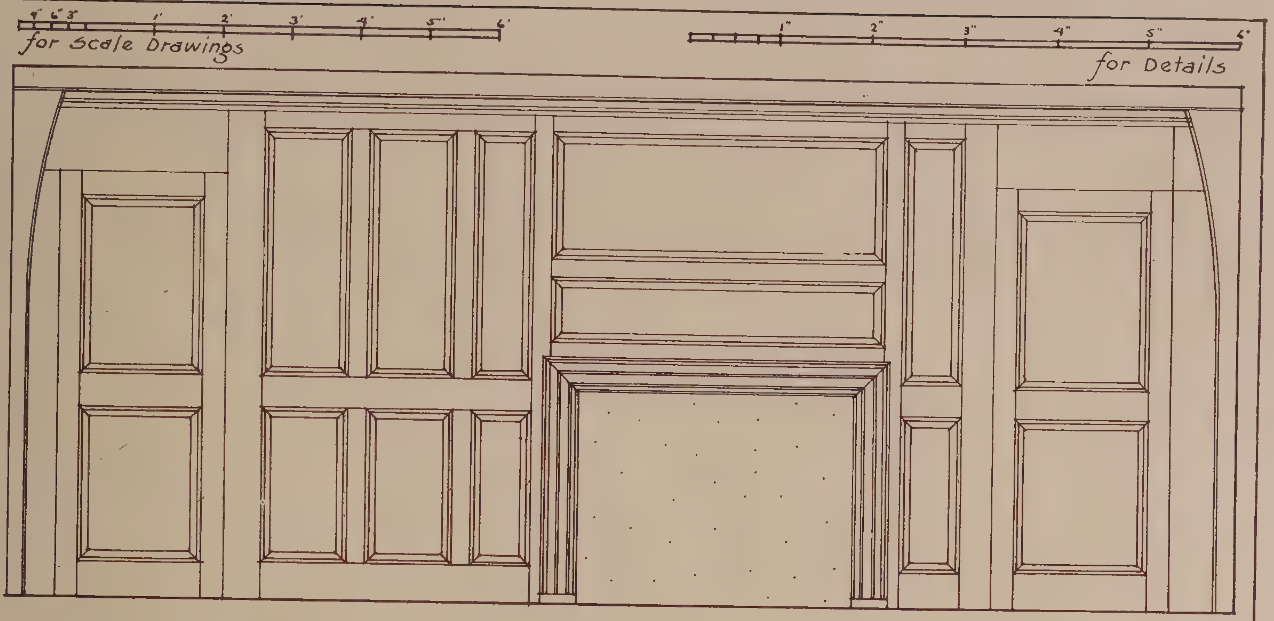
NATIONAL ACADEMY OF SCIENCES, WASHINGTON, D. C.



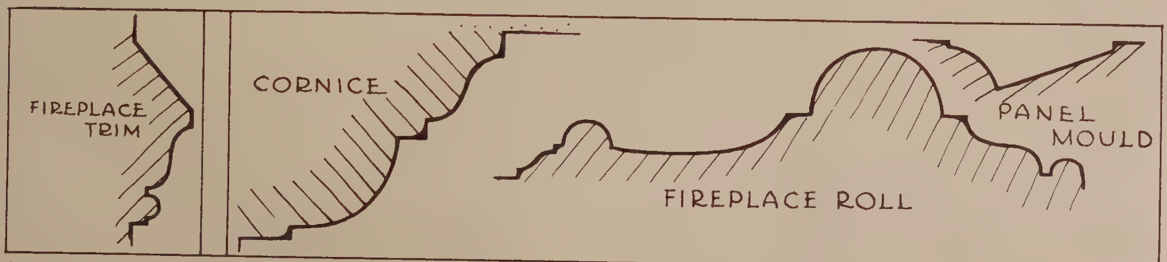
SCULPTURED PANELS IN WINDOWS.

Bertram Grosvenor Goodhue, Architect.

NATIONAL ACADEMY OF SCIENCES, WASHINGTON, D. C.

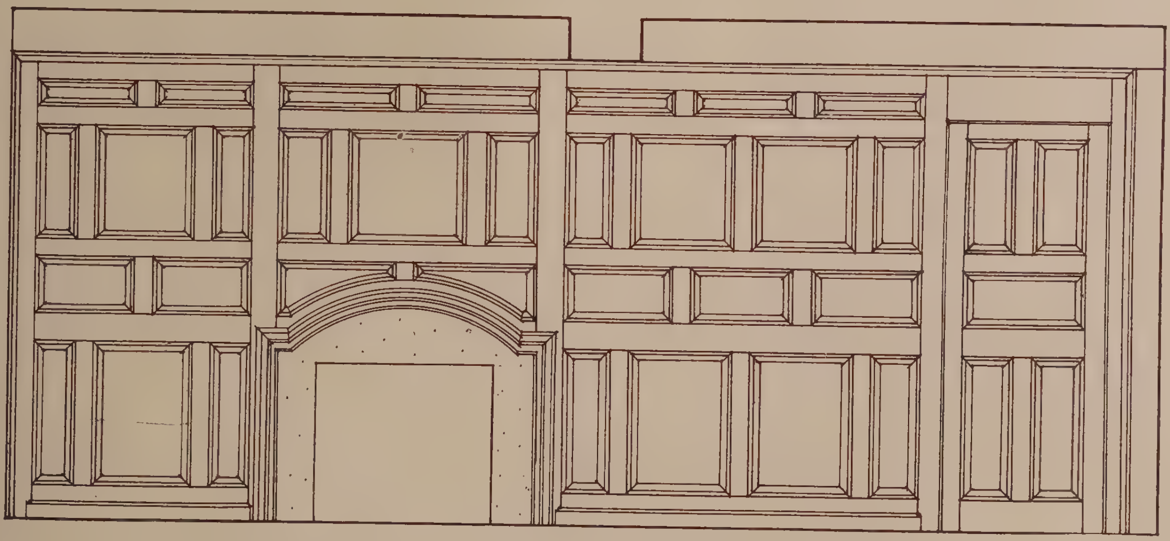


EAST CHAMBER, PARKER TAVERN, READING, MASS.



DETAIL—FLANDERS

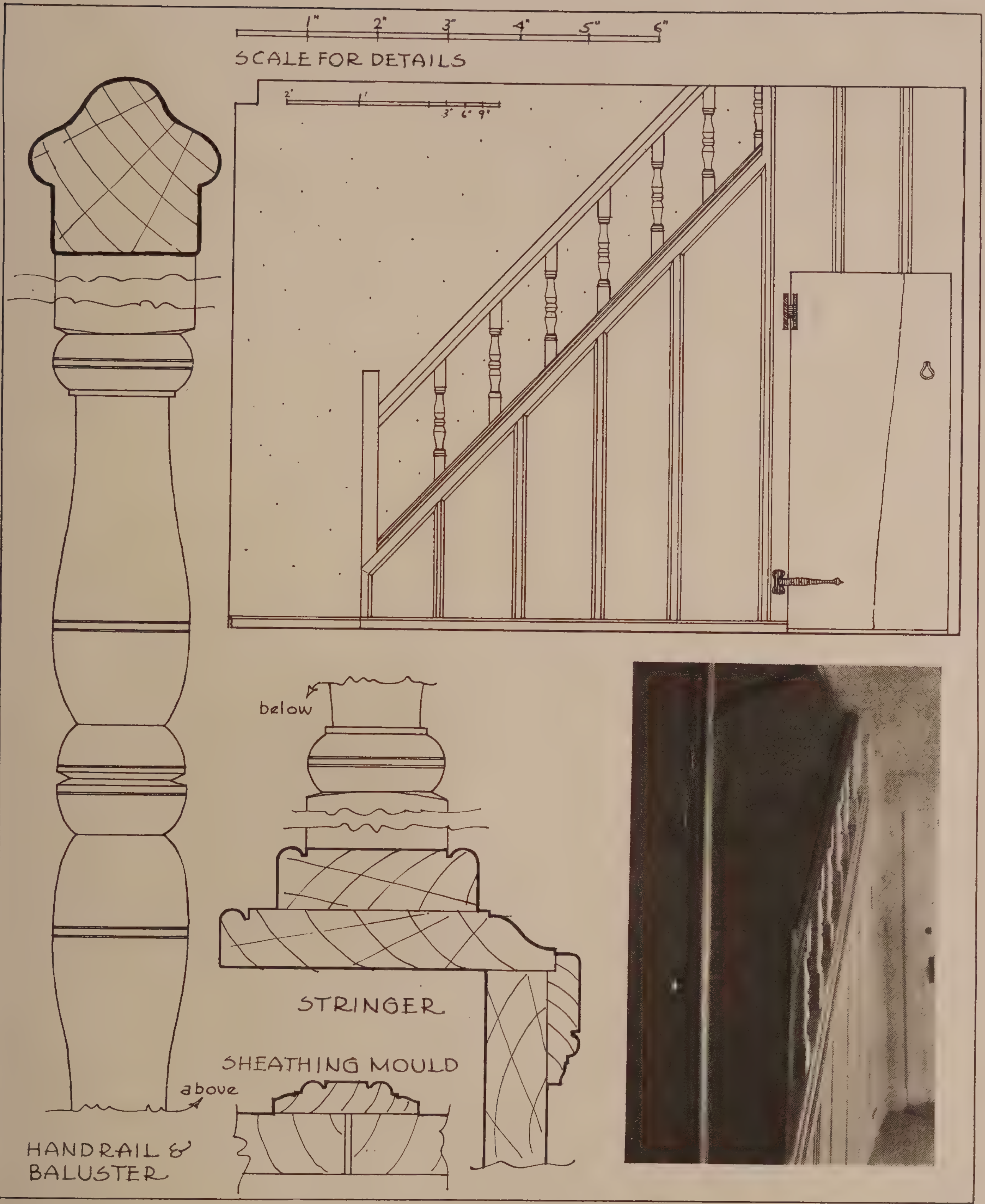
DETAILS — READING



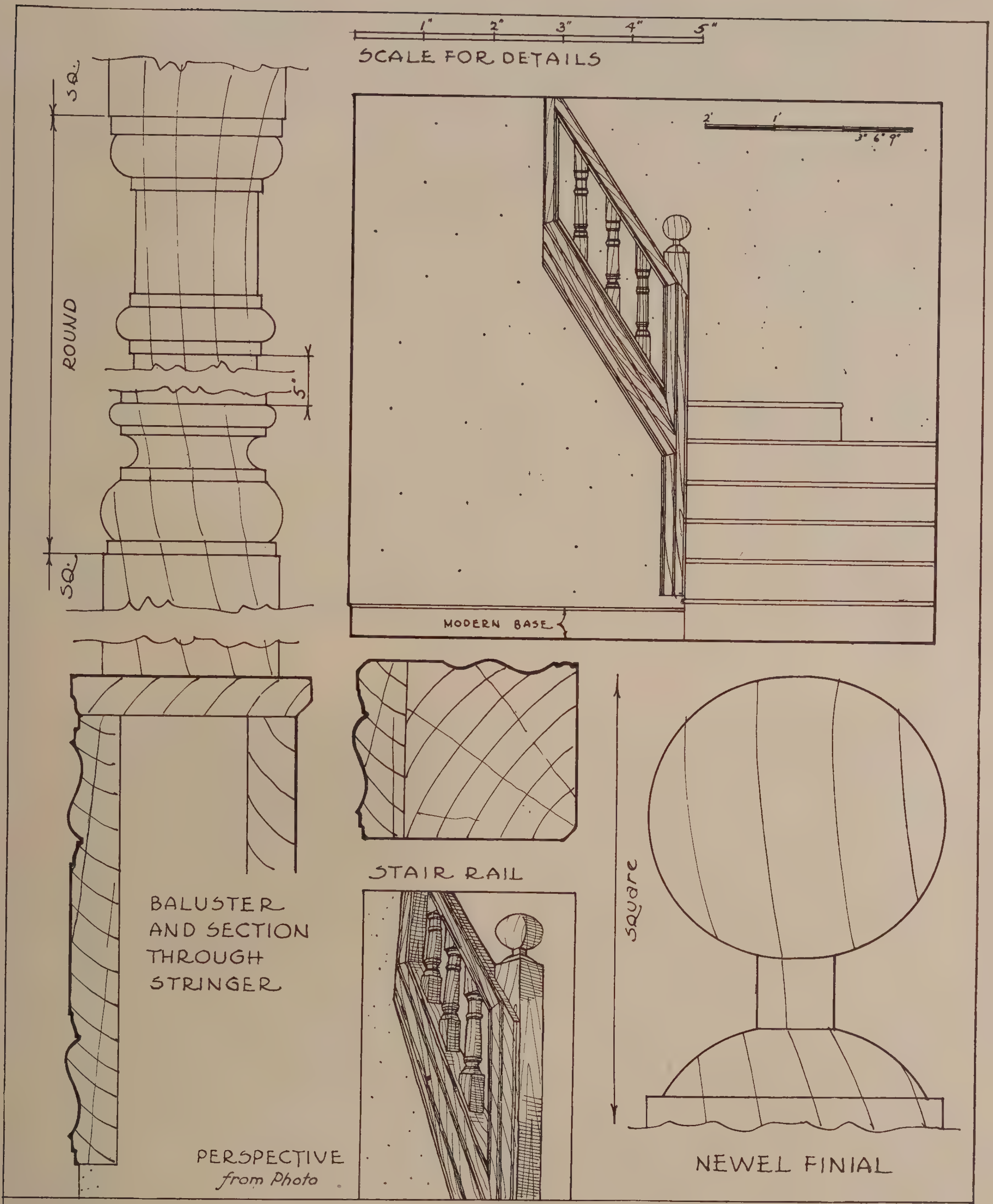
NORTH PARLOUR. HOUSE AT FLANDERS. CONNECTICUT

TWO EIGHTEENTH CENTURY PANELLED ROOMS

MEASURED & DRAWN BY THOMAS TILESTON WATERMAN



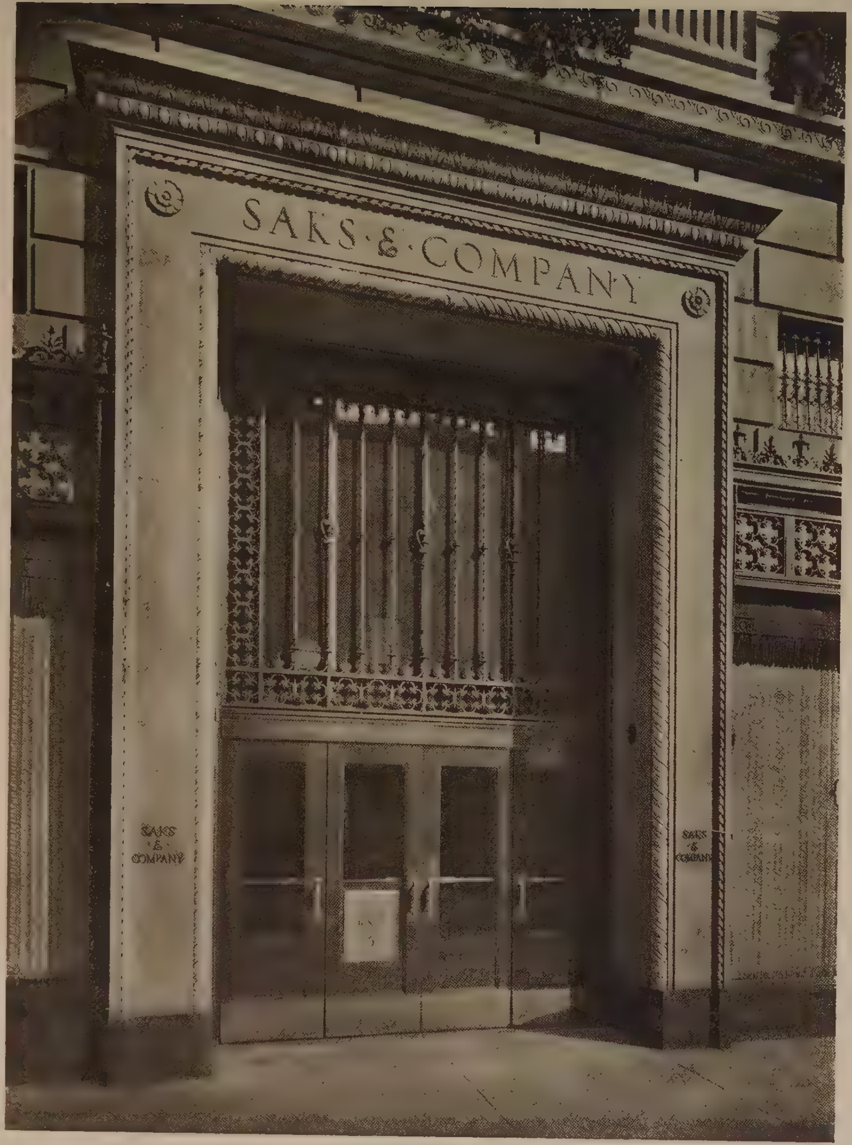
STAIRCASE. CORBETT HOUSE, IPSWICH, MASS.
TRADITIONAL DATE 1634
MEASURED & DRAWN BY THOMAS TILESTON WATERMAN



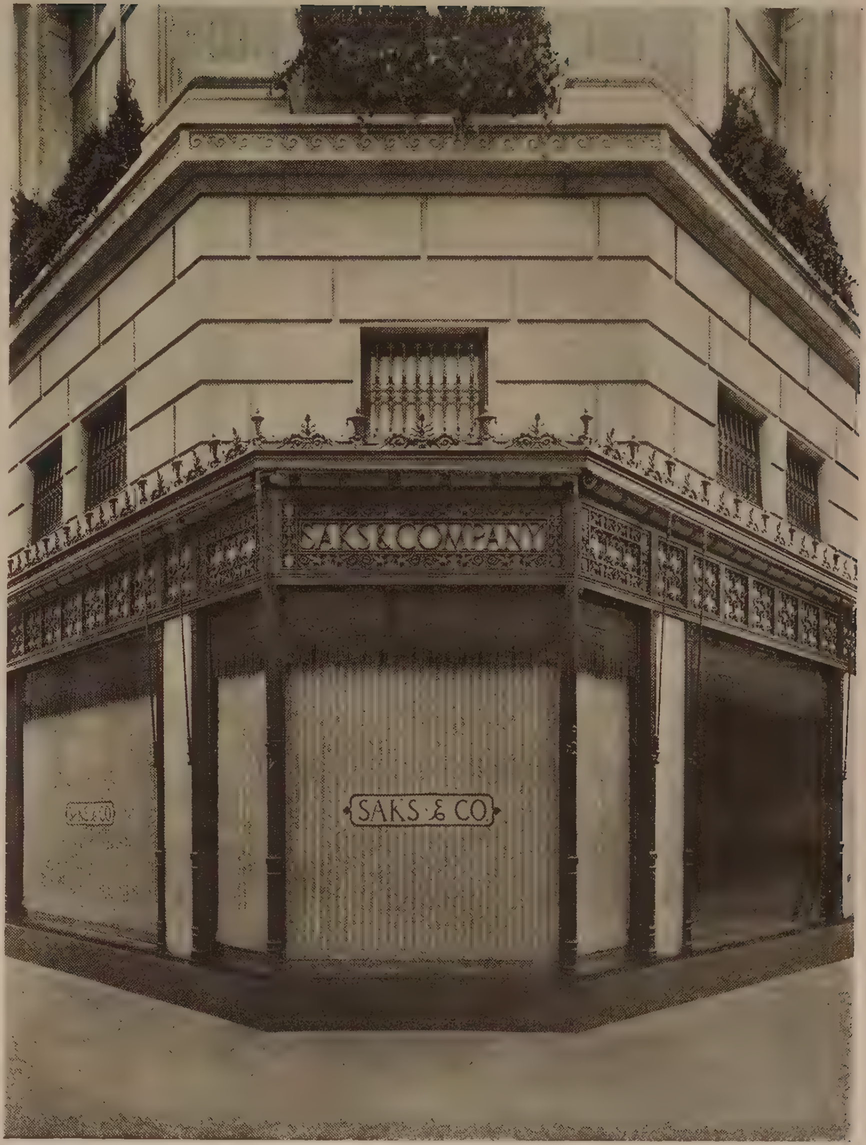
STAIRCASE, WITCH HOUSE, SALEM

CIRCA 1660

MEASURED & DRAWN BY THOMAS TILESTON WATERMAN



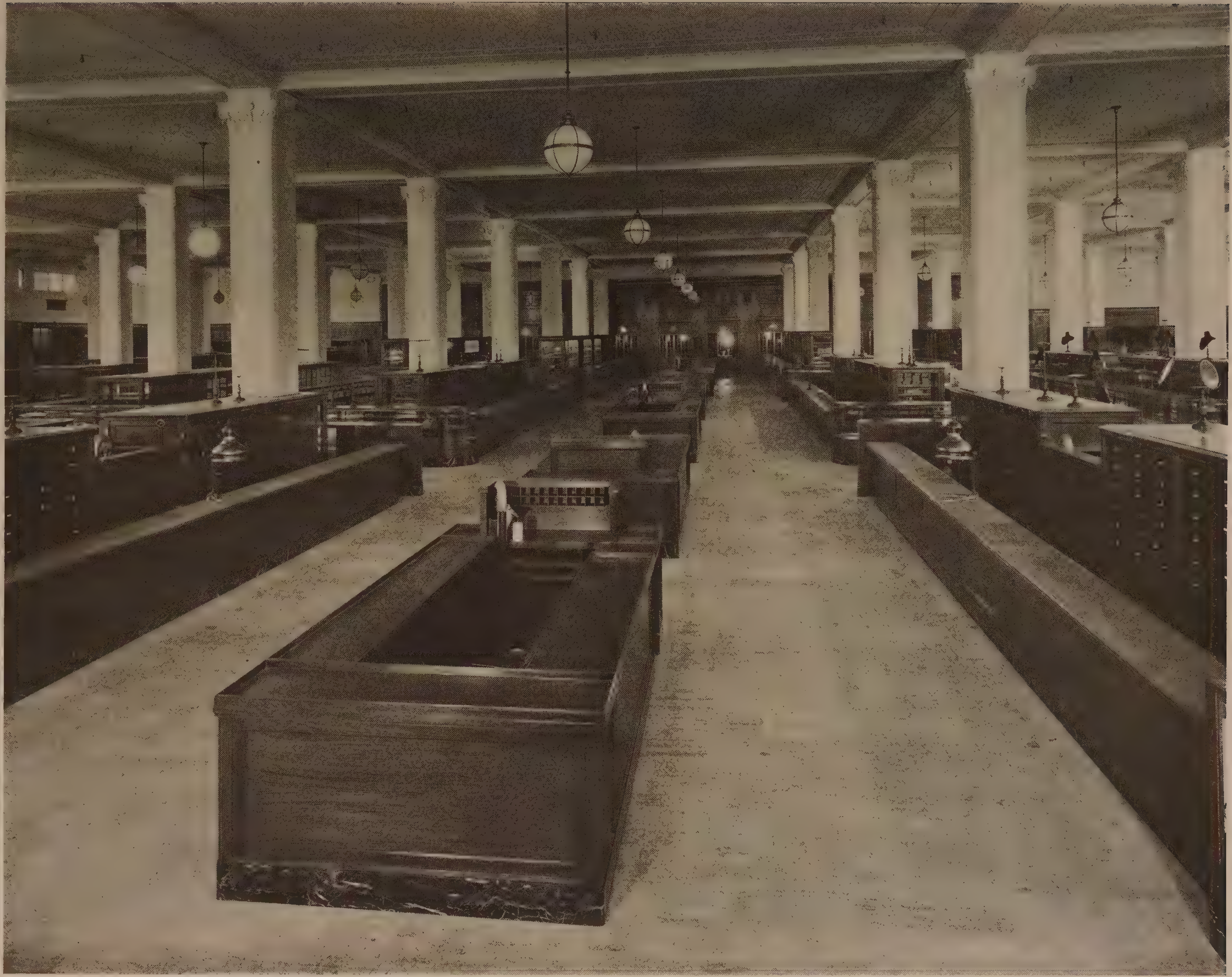
FIFTH AVENUE ENTRANCE.



A CORNER DISPLAY-WINDOW.

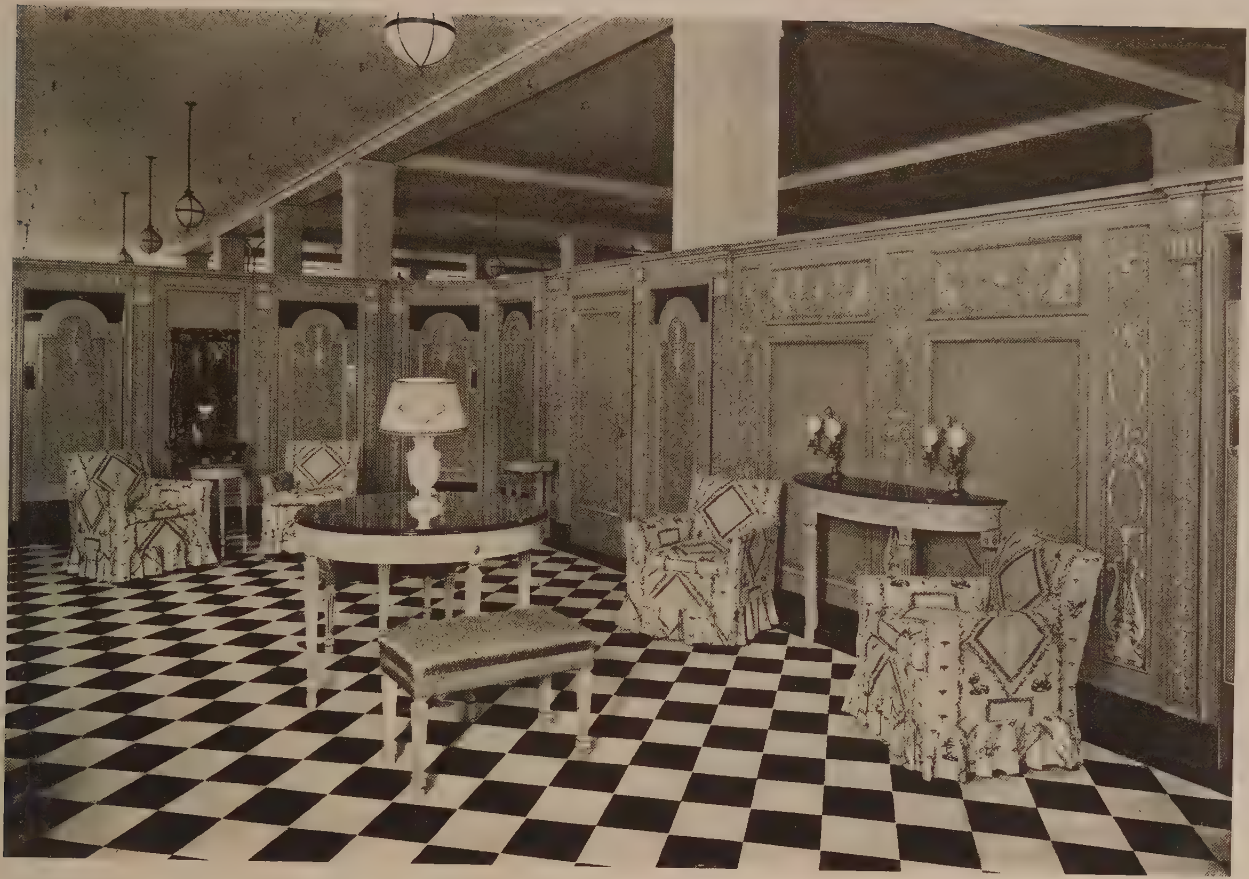
Starrett & Van Vleck, Architects.

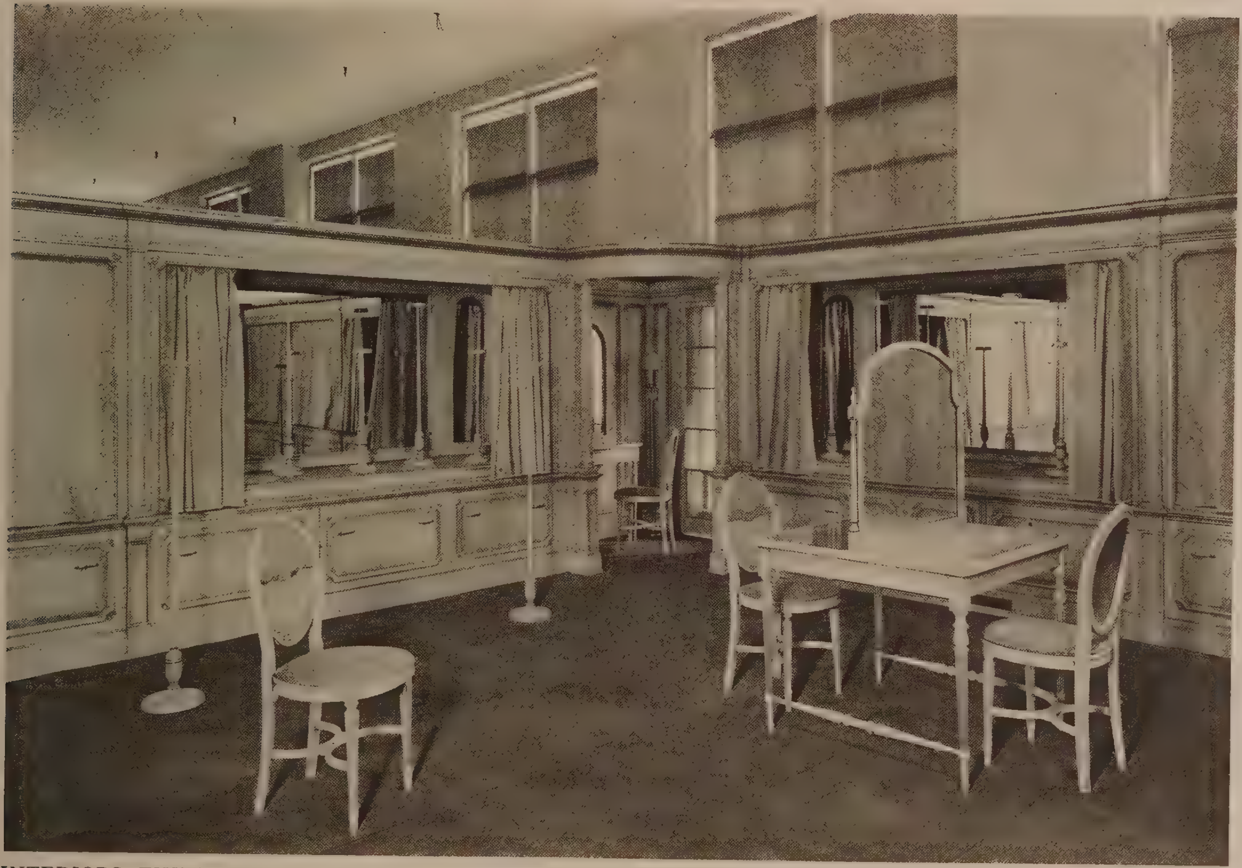
DEPARTMENT STORE, SAKS & CO., NEW YORK.



MAIN FLOOR, DEPARTMENT STORE, SAKS & CO., NEW YORK.

Starrett & Van Vleck, Architects.

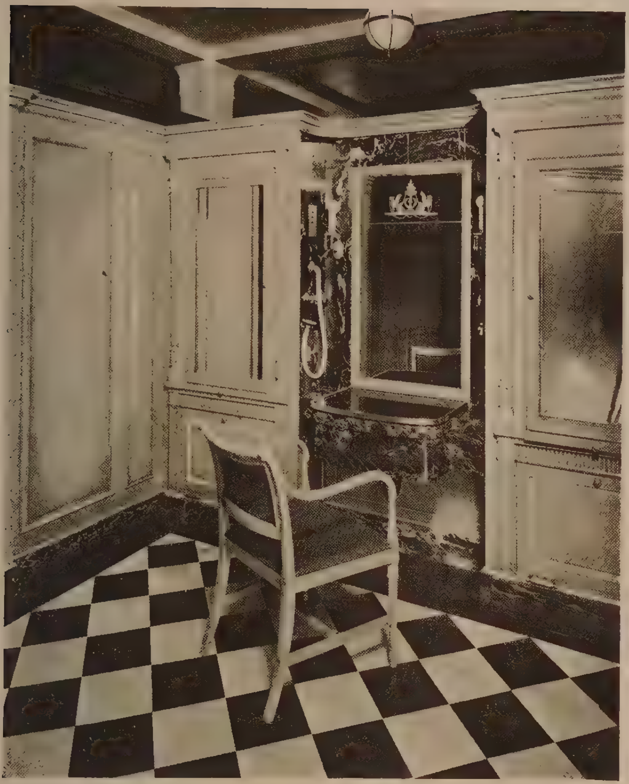




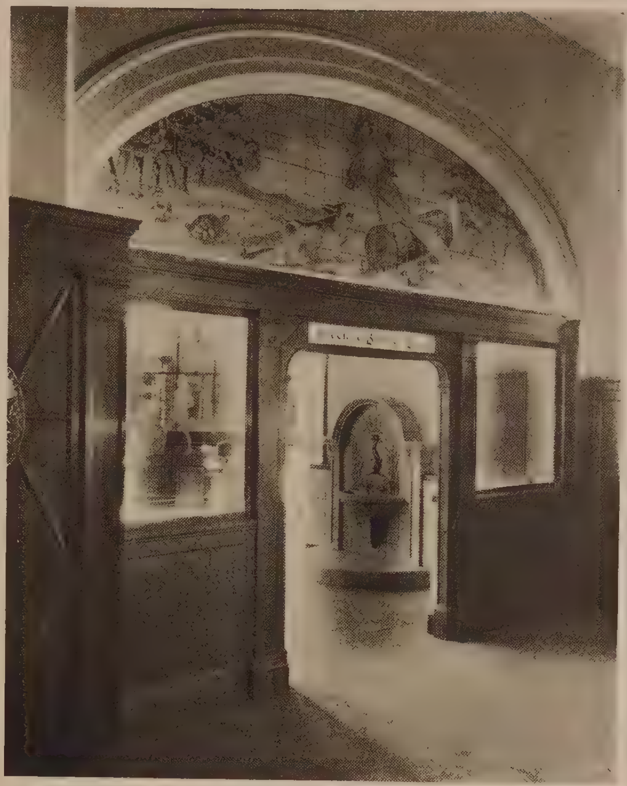
INTERIORS, THIRD FLOOR.

DEPARTMENT STORE, SAKS & CO., NEW YORK.

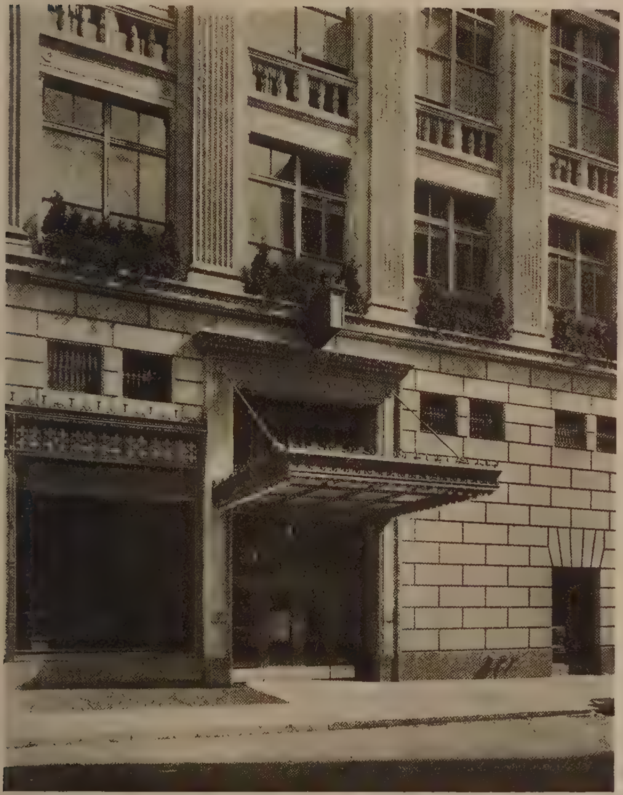
Starrett & Van Vleck, Architects.



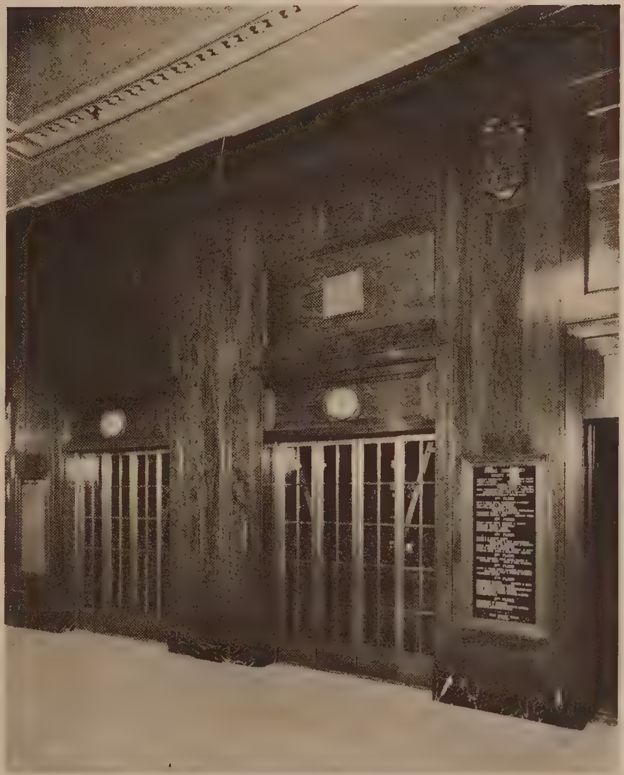
A SHOWROOM.



ENTRANCE TO CHILDREN'S BARBER SHOP.



49TH STREET ENTRANCE.



ELEVATOR ENCLOSURES, FIRST FLOOR.

DEPARTMENT STORE, SAKS & CO., NEW YORK.
Starrett & Van Vleck, Architects.

The Garage and Stables of Richard B. Duane, Esq.

Lucian E. Smith, Architect

LOCATED at Bryn Mawr not far from the Radnor Hunt, the programme had the condition of not only containing a large garage but stabling for riding horses as well as cows. The main floor plan, 70 feet by 46 feet, comprises a complete layout for these purposes, disposed in such a way that not a square foot of space has been wasted.

The garage is of a size to contain three, or even four, cars, and is completely isolated from the remainder of the building by tile walls, self-closing fire-doors, and cement plaster ceiling on wire lath. An overhead washer, gas storage with pump, sink, work-bench, store closet, and pilot lights completes the equipment.

In the rear of the garage are the artesian well, storage-tank of 6,000 gallons, and electric automatic pumping equipment. The heating system is hot water. The boiler-room is cut off from the garage by two self-closing fireproof doors, thus obviating any danger of fire.

The horse-stable contains three box stalls, 8 feet by 12 feet 6 inches, with clay floors. A feed-room serves both the horse and cow stable. A harness room with outside air is next to the entrance.

The cow-stable contains three cow-stalls, and one calf-pen, of the most up-to-date construction, with enamelled iron divisions, drinking-fountains, cork floors, feed and drainage troughs. A wide sliding door leads to the paddock. Both stables are ventilated by ducts leading to the ventilator on roof.

The manure-pit is covered with removable fly-screens. The drainage from the cow-stable flows into the bottom of this pit.

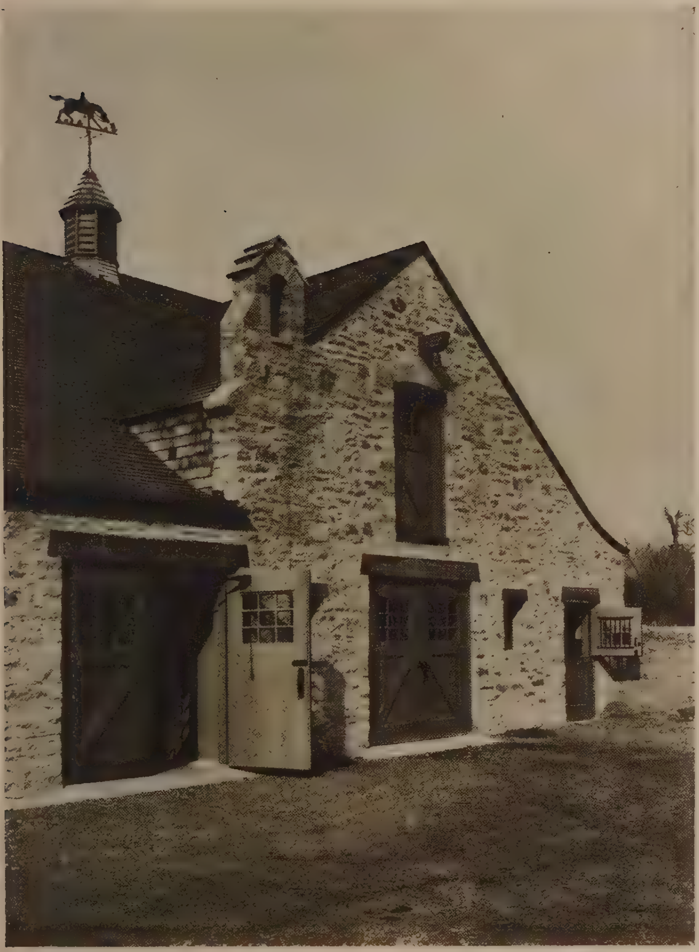
The second floor contains quarters for the farmer and his family, consisting of living-room, kitchen, and cold room, three bedrooms, and a bath. An exterior staircase serves these quarters.

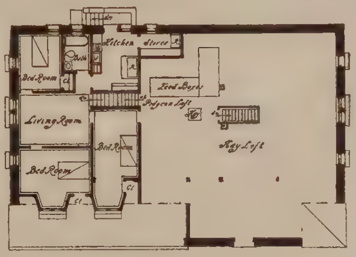
A large hay loft covers the two stables. The feed-boxes are of ample size for a good supply of feed, and are lined part way up with galvanized iron. One stair leads to the cow-stables below, and another to the pigeon-loft above the living quarters.

The small belfry has a bronze bell, which may be rung from the ground for use in calling the farm hands to meals.

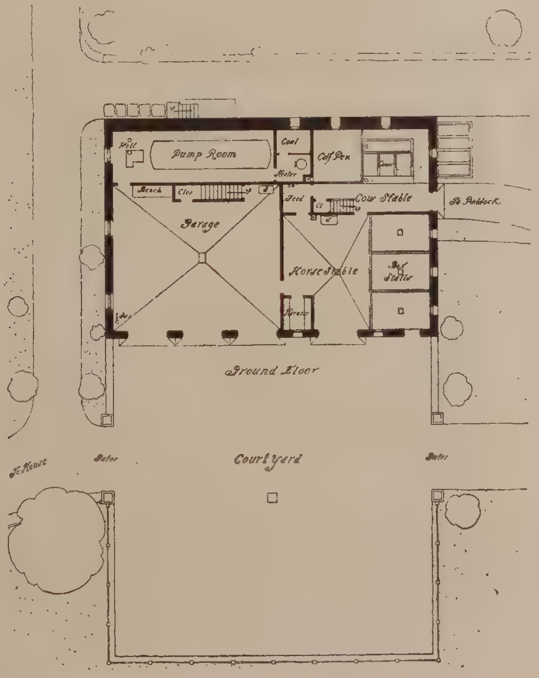
The wrought iron weather vane was designed to represent the small son of the house upon his favorite pony, who is giving a friendly greeting to one of the prize Cairns which the owner raises.

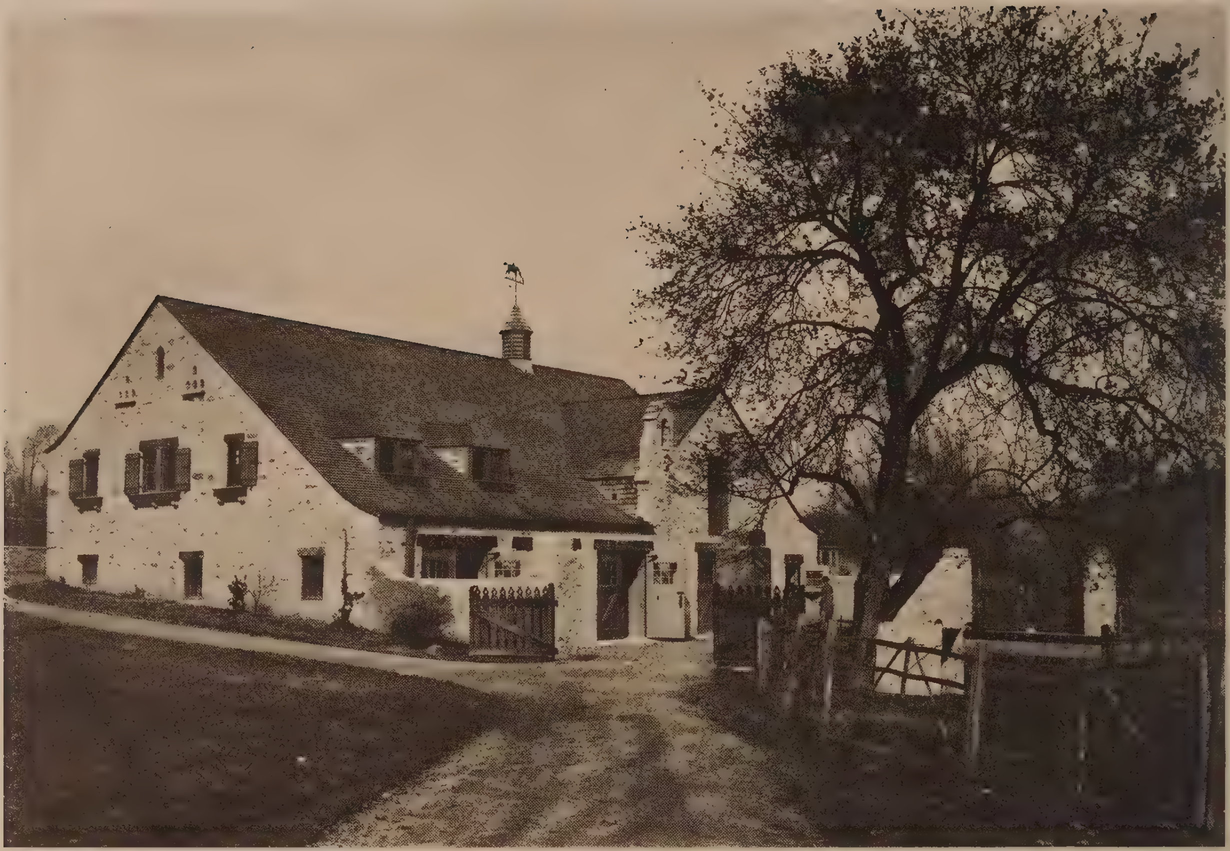
The exterior court is closed at night by two sets of massive wood gates. The court itself is at present enclosed with a rail fence, but eventually will be replaced by stone walls.

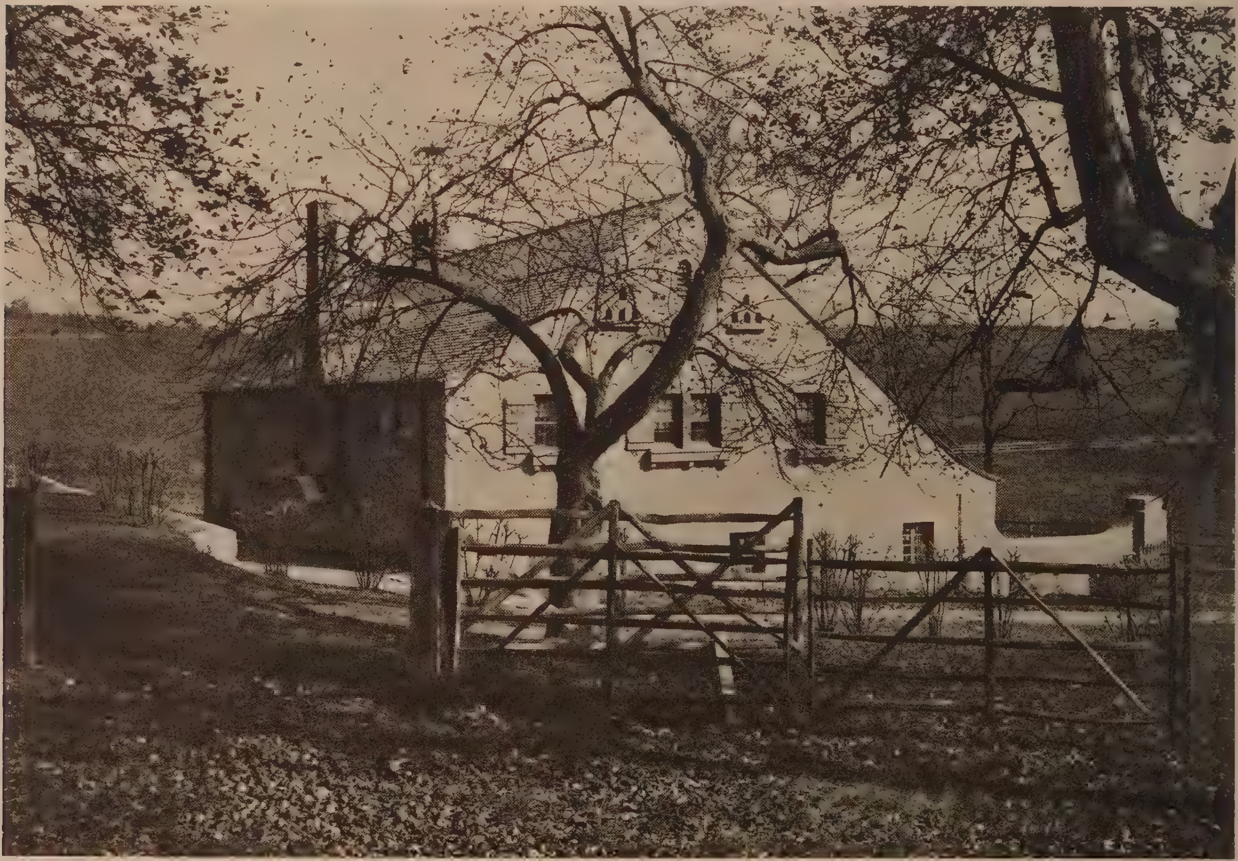




Second Floor

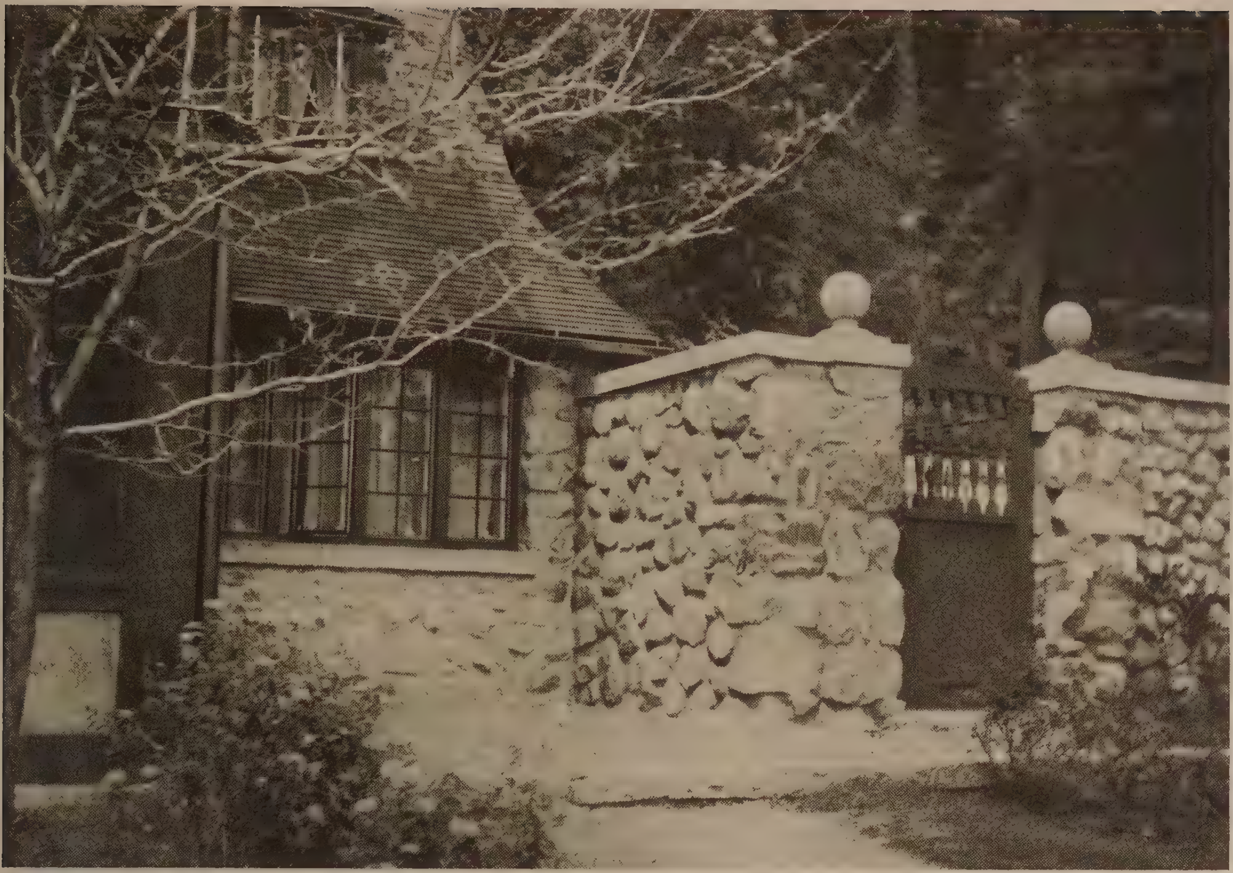




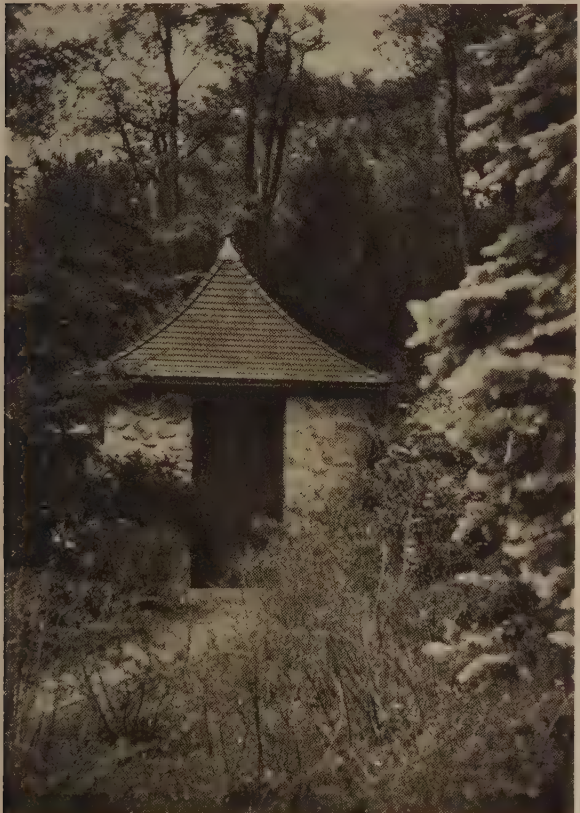


GARAGE AND STABLES OF RICHARD B. DUANE, BRYN MAWR, PA. Lucian E. Smith, Architect.

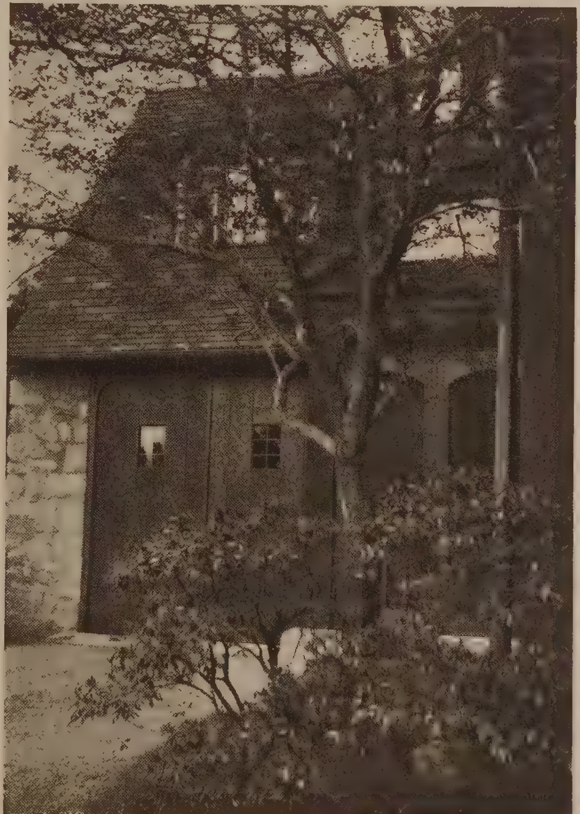
The exterior of the building is of stone stained a light buff color with a transparent stain which allows the texture and some of the color of the stone to show through. The exterior trim, doors, sash, and shutters are painted a dull blue. The solid adzed lintels are treated with a colorless preservative, which will allow the wood to weather naturally. The roof is shingled.



LAUNDRY AND LAUNDRY YARD.

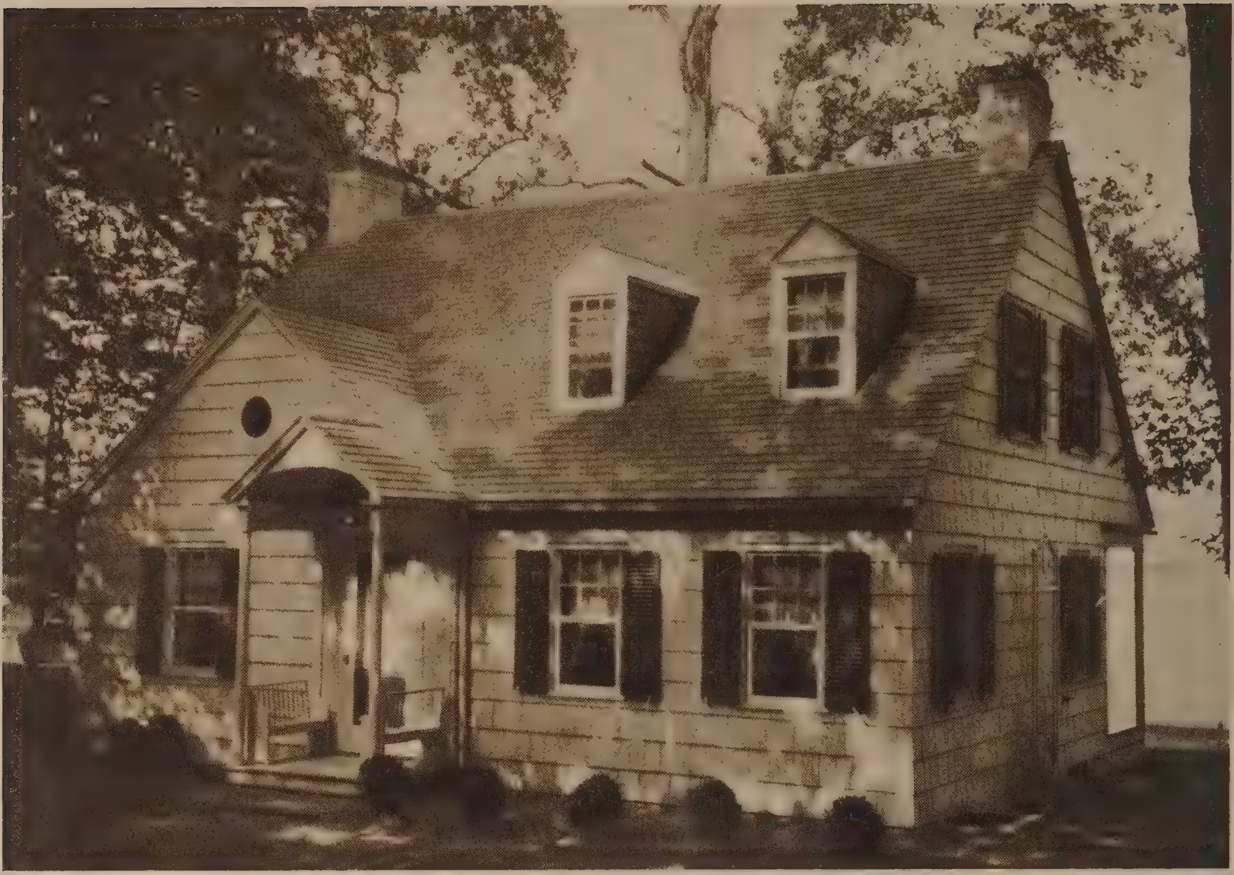


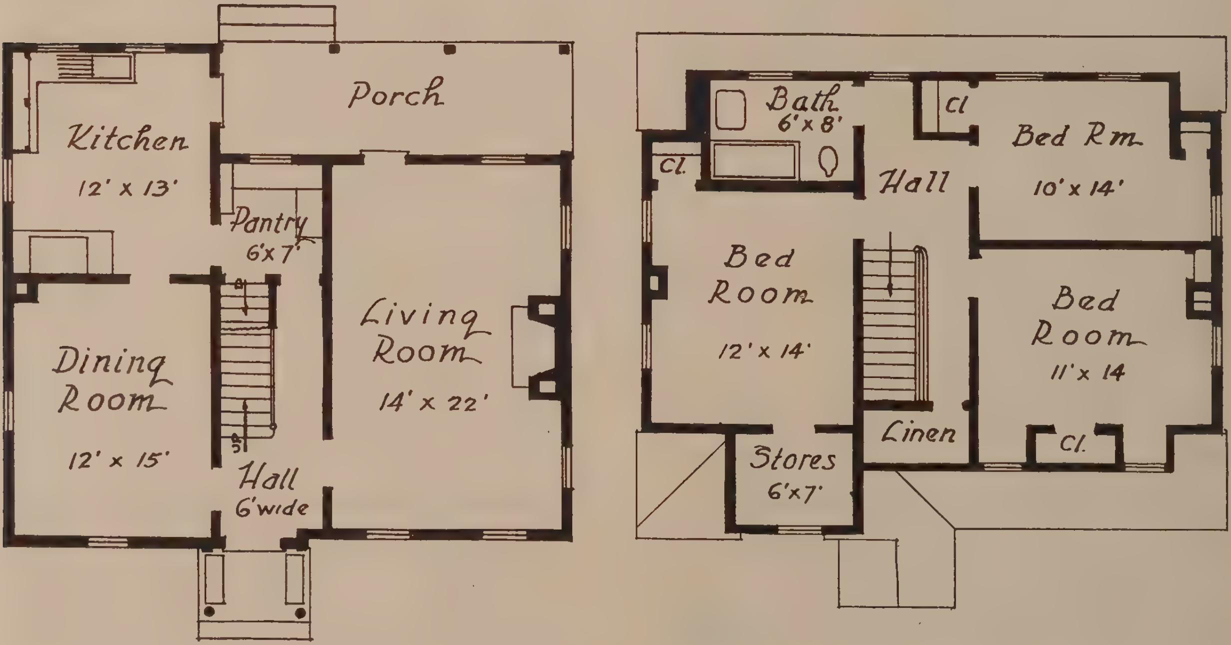
TOOL-HOUSE.



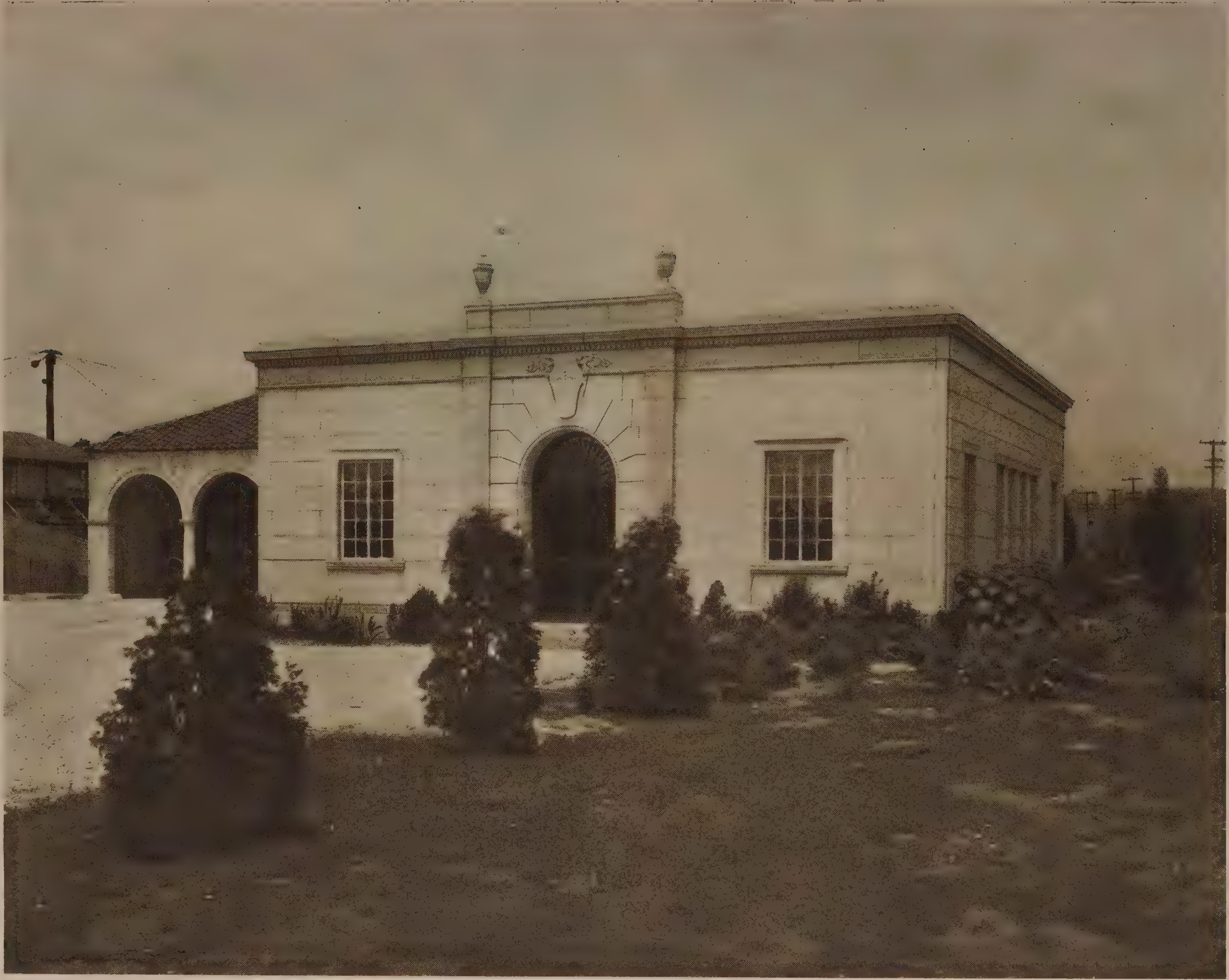
GARAGE. Charles S. Keefe, Architect.

THE LODGE, SKYLANDS FARM, STERLINGTON, N. Y.



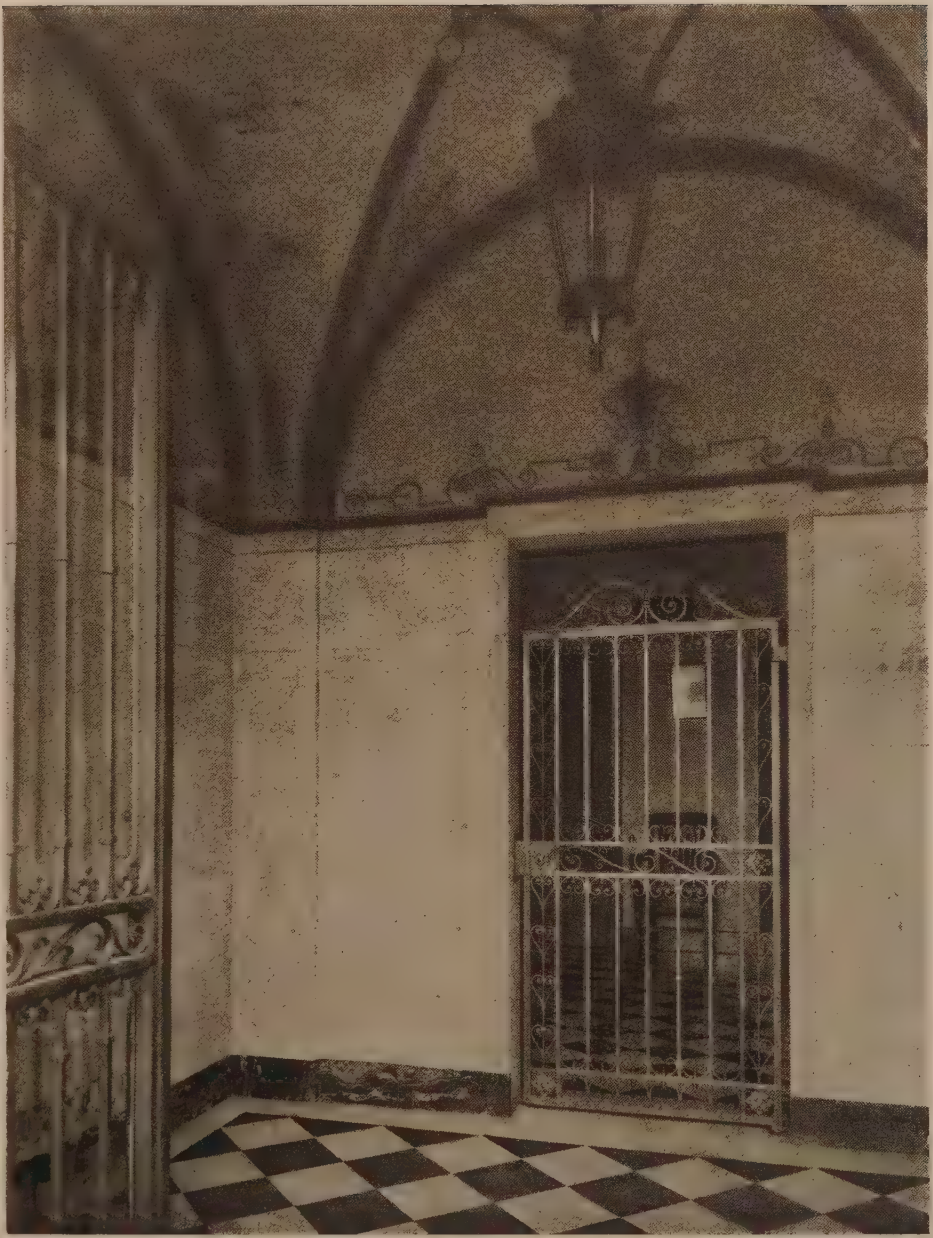


SUPERINTENDENT'S COTTAGE, ESTATE MRS. W. H. HARKNESS, GLEN COVE, N. Y. Charles S. Keefe, Architect.

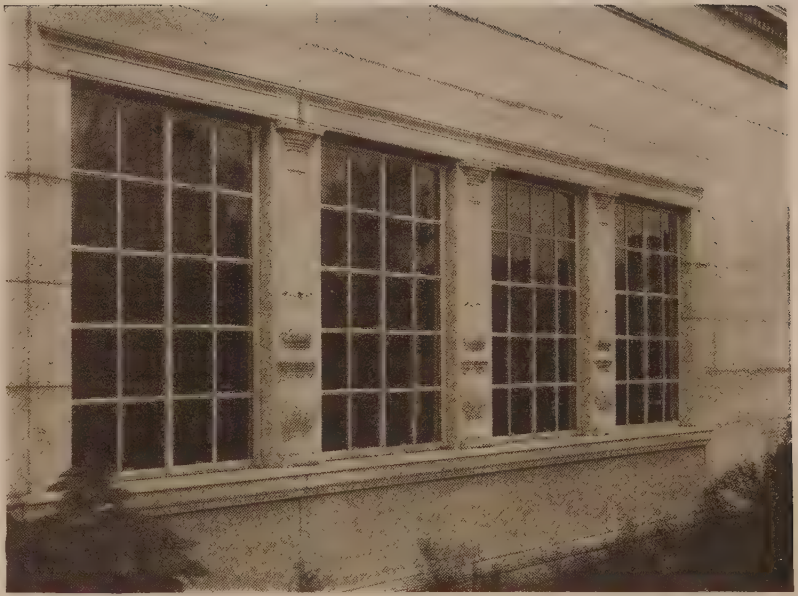


OFFICE BUILDING, CANDARA MARBLE CO., KNOXVILLE, TENN.

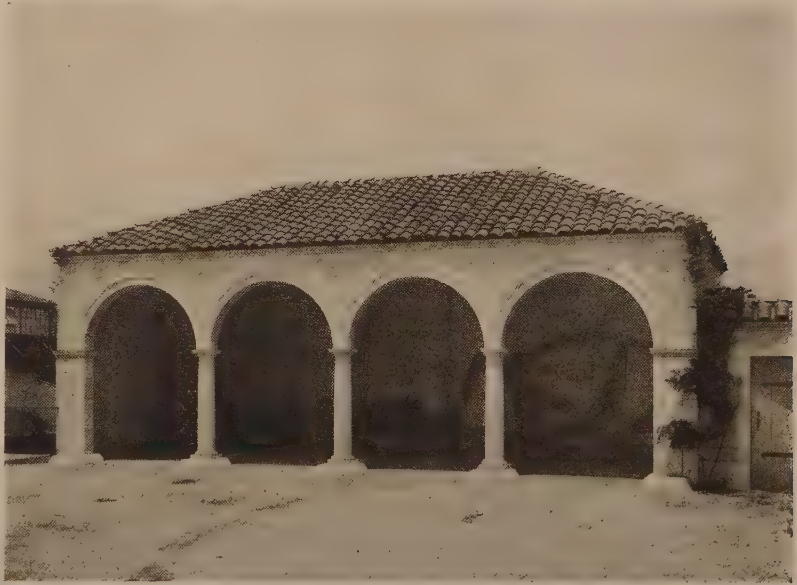
Barber & McMurry, Architects.



INTERIOR, OFFICE BUILDING, CANDARA MARBLE CO., KNOXVILLE, TENN.



DETAIL OF WINDOW



Barber & McMurry, Architects.

Construction of the Apartment-House

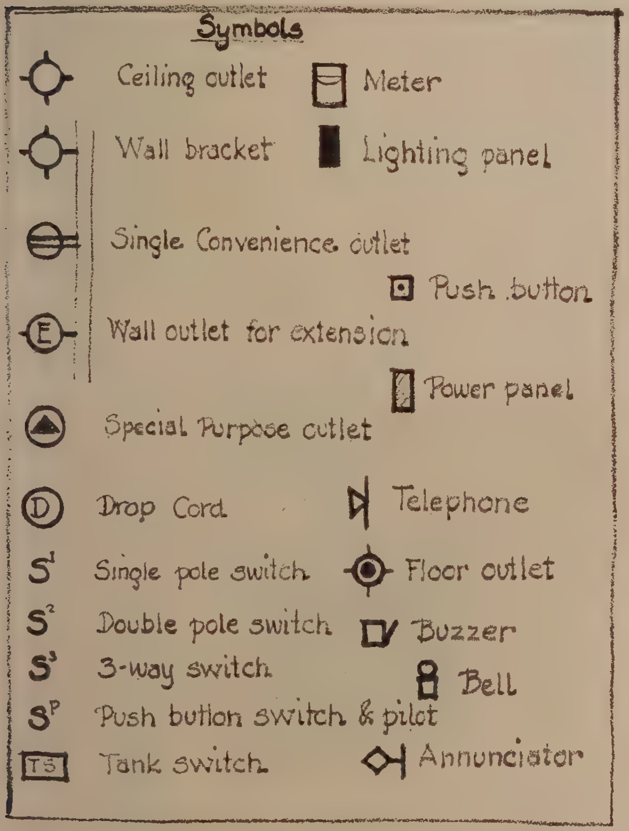
By H. Vandervoort Walsh

Professor of Construction, School of Architecture, Columbia University, New York City

ARTICLE XXI

Electric Equipment

ELECTRIC energy in the apartment to-day is taken for granted. Even the old apartments are rapidly becoming wired for this convenient source of light, heat, and power. When an electric current flows through a wire a certain amount of resistance is set up, which changes this electric energy into heat. Electric toasters and heaters use this principle. Electric lights are about the same, except more of the energy is converted into light than heat. On the other hand, motors change the energy into mechanical power, because they utilize the magnetic force which is set up by a coil of wire through which a current flows.



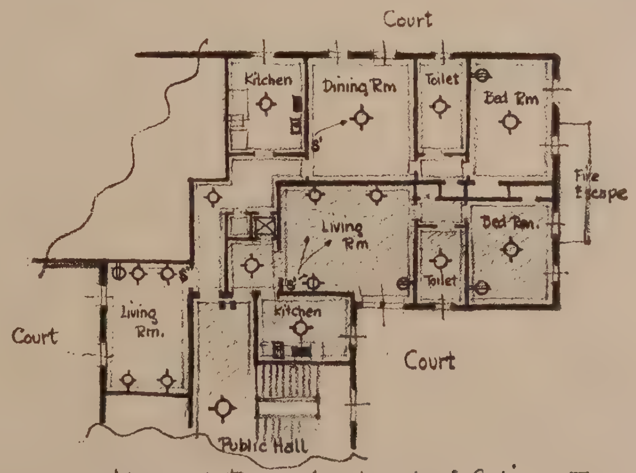
The fact that heat is developed in a wire through which electric energy flows not only gives us the electric heating apparatus and the incandescent light, but also requires an elaborate system of wire protection to prevent overheated wires from setting the building on fire. Extra heavy charges of electric energy over the wires, or the arc from a short circuit produced by two live wires in partial contact and having defective insulation, may give so much heat that surrounding woodwork will be ignited. Insulation of rubber and braided cotton may not be enough always to keep the wires from being short-circuited. For this reason, protecting conduits of steel around the wires, which run through walls and floors, are necessary, and enclosing boxes of steel are required around all splices. The special protection of fuses is also needed on various circuits. These fuses are made of metal that will melt under the heat produced by an oversized charge of electricity, which might, if this safety device were not added, melt the insulation on the wires and cause a short circuit and arc. Protecting switches that will cut off this energy from different circuits in an emergency are also a necessary part of the electric wiring system.

The rules and regulations governing the installation of electric wires in a building given in the National Electric Code are to-day universally accepted for apartment-houses, as well as other types of buildings. If these rules are followed a reasonably safe wiring system is assured. There is always a little doubt about this matter in some of the cheaper apartments.

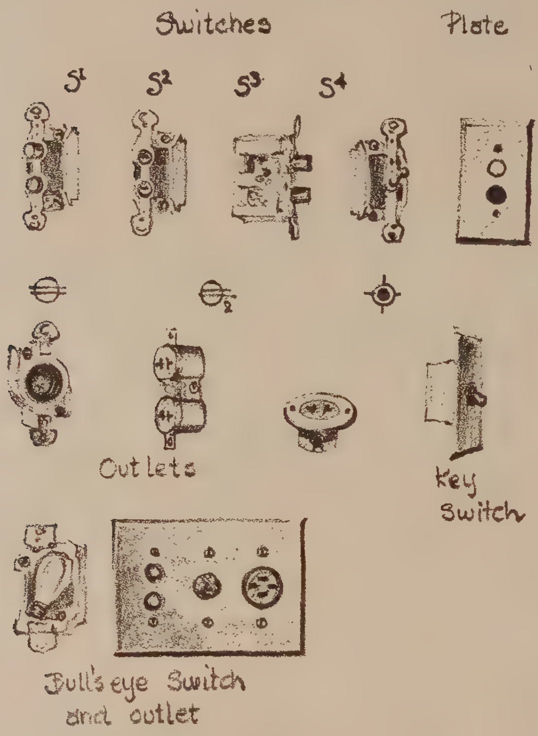
Now, into every apartment-house a service feeder must be carried, either underground or overhead, depending upon the position of the main lines. If it is an overhead feeder then it is made weather-proof by special covering and insulation. From the high point where the wires are attached to the building they are carried down the outside and into the basement within a rigid iron conduit. If the feeder is carried in underground, then it is enclosed within a galvanized iron pipe and the wires are covered with lead. The conduit itself is protected by being painted with asphaltum.

The lighting feeders are made of sufficient size to carry the entire lighting load with all circuits fully loaded. The power feeders are made equal in capacity to the combined capacity of the motor feeders. However, sometimes a load factor of only 75 per cent of the total is permitted.

There are two methods of wiring an apartment-house, depending upon the position of the meters. These may be



A 3 and 4 Room Apartment of Ordinary Type Electric Outlets placed in each individual apartment or together in a row in the basement. This latter is the best and most approved system, for the reading of the meters is simplified. With this arrangement there is installed in the basement a meter and cutout board, consisting of 1¼-inch hard wood, battened and securely mounted to the wall. This board is made large enough to provide ample room for all the meters without crowding. It is painted with two coats of moisture-repelling paint. On this board are mounted, in a row, the meters for each apartment and one for the owner, and also a steel box extending the entire length of the board with a self-closing door, provided with catch and hasp for a padlock. In this box are placed the necessary number of branch-circuit, plug-fuse, cutout bases. From the meter-board are carried feeders to the distributing centres in each apartment. If the apartments are so small that one circuit will do for each apartment, then no distributing centre is needed, but a cutout on the house side of the meter in the basement is necessary. (One circuit is commonly limited to a loop having on it not more than ten outlets.)



If the meters are placed in each apartment then a general service-panel is set up in the basement, consisting of 1¼-inch black finished slate, mounted in a steel cabinet with a steel door. On the panel are placed fused knife switches for each and every feeder, together with a main knife switch. From this service panel a loop is carried up to the top floor and to all the distributing centres in the apartments. In each apartment, generally on the wall of the kitchen or service hall, are located steel boxes with steel doors in which are placed the required number of branch-circuit, plug-fuse, cutout bases. A meter is also fastened to the wall near this distributing centre.

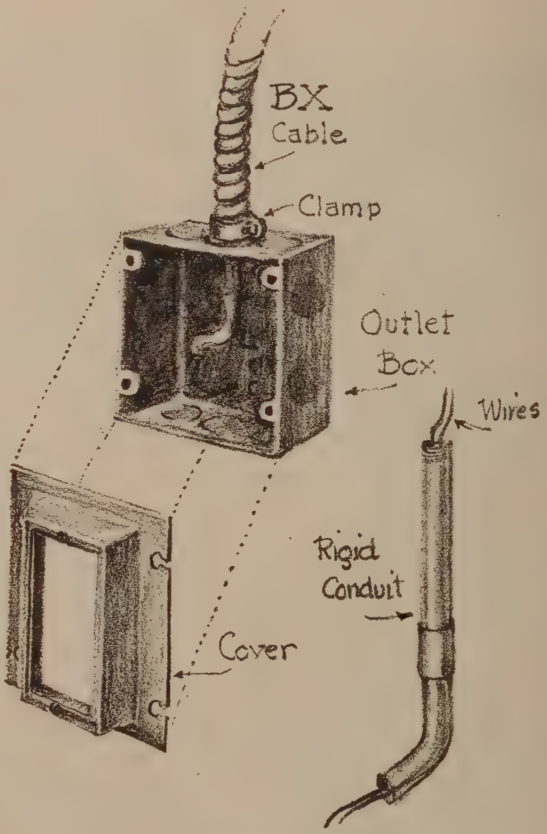
Whatever system of wiring is adopted, there must always be installed, on the main feeder, entrance fuses, switches and the like to conform with the requirements of the lighting company.

A distributing-board must also be provided for the motor feeders, equipped with the necessary knife switches, cutouts, fuses, and meter. This distributing-board should be enclosed within a cabinet.

The wires used throughout the building are generally rubber covered and protected with cotton braiding, and of the standard specified in the National Electric Code. These wires are protected in non-fire-proof apartments within conduits made with spirally wound steel bands. When the wires are an integral part and tightly enclosed within this flexible conduit, it is called BX cable. When the spiral steel tubing is set in place within the building and the wires pulled through afterward, it is known as flexible steel conduit. The former, or BX, cable is used most in non-fire-proof apartments. The latter is not extensively employed.

In fire-proof apartments, on the other hand, rigid steel conduits, like piping, are installed, through which the wires are pulled. These conduits are set up before the floors are poured and the partitions erected, in order that they may be entirely enclosed within the construction. It is a common sight to see the various conduits hanging down from the ceiling in a partially built fire-proof apartment, waiting for the partitions to be built up and around them. Rigid steel conduits are also used in non-fire-proof apartments to cover those wires which run up through the masonry walls from floor to floor, and those branches which extend into the fire-proof construction of the stair-wells and public halls.

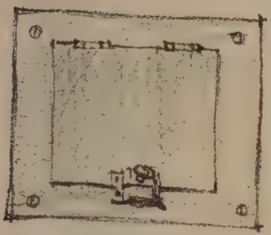
At every outlet for ceiling or wall fixtures, base or floor plugs and switches, the protecting conduit is carried into a steel box. These outlet-boxes are made in different shapes and have covers. Holes are partially stamped in their sides and wherever a wire is to be carried into the interior the metal disk that fills a hole is knocked out, leaving an opening through which the conduit can be run. All splices with



fixture wires, switches, and plugs are made within these boxes. Unless otherwise indicated, it is customary to locate plug receptacle boxes just above the baseboard; wall bracket boxes 5 feet above the floor in bedrooms and 5 feet 6 inches above the floor in other rooms, and wall switch boxes 4 feet above the floor.

Meter

Outlets in halls and entrance and stair halls are controlled by a double switch control with two circuits carried through all outlets, and lock type switches placed in the entrance-hall. These lights, as well as those in the basement, are wired from the owner's distributing centre and metre.



Distributing Center Steel Box

The types of switches, plug receptacles, and fixtures selected depend upon the individual taste of the builder and the type of building. In first-class apartments these are selected with great care, but in the ordinary apartment the cheapest and simplest fittings are installed. In the latter no originality is shown, but cheap custom rules. A centre light is used in the kitchen, halls, bedrooms, and dining-rooms, and the living-rooms have side lights. Plug receptacles are scattered about without much planning as to whether they will be convenient or not. Indeed, there is generally a sad lack of plug receptacles, which creates a dangerous condition after tenants move in, for wires will be extended from one room to another to make up for the lack of outlets. We have seen many apartments in which wires were carried around baseboards and picture-mouldings by tenants, who did this work themselves, tacking the two strands of wire together as though no current were in them. Short circuits from such wiring cause many a fire. A few dollars saved on a plug receptacle may cost many thousands later with a fire.

The wiring for electric bells is, in the better class apartments, carried in metal conduits, and outlet-boxes are used much the same as for the electric lighting. Only in cheap frame buildings or non-fire-proof apartments are these low-tension wires left unprotected.

A bell is placed in every apartment, operated by a special push-button at the entrance vestibule. A buzzer is also installed, which is operated by a push-button at the door of the apartment opening into the stair-hall. Buzzer service is also installed for the dumbwaiter, service entrance, and dining-room. A push-button control of the door lock is put into every apartment where no door service is provided. Where the number of buzzers and bells exceeds three, it is customary to install an annunciator. These bells are operated by batteries usually, but in some cases transformers are used so that the house current can be made to supply bell current. All feeders from batteries should terminate on an approved interconnection strip with a fuse for each feeder.

Conduits are also installed for telephone wires. From the point where the wires enter the building to the main interconnection box they are protected by iron conduits. From the interconnection box the conduits extend to the different apartments. These are made large enough to accommodate, without crowding, two pairs of the telephone company's inside, twisted pair wires. A conduit is also extended to the switchboard.

TO BE CONTINUED.

The Kind of Town We Would Like to Live In

By John Ihlder

Manager, Civic Development Department, Chamber of Commerce of the United States

THE excellence of a town depends so much upon the ability and the spirit of its people that these may quite upset any comparative rating based upon actual, tangible accomplishment, though, of course, with ability and the right spirit the people of any given community are bound to secure a lot of accomplishments.

The trouble is that we have to mark them on what they have done to date, and cannot take into account, what may be the fact, that they have been overcoming some great natural handicap which absorbed most of their energy without showing much positive result, or, what again may be a fact, that they have only recently learned how to work together effectively. In either case the marks given their town are likely to be low, and yet, because of the spirit they have developed, the things they are now doing, the accomplishments they are sure to have to their credit in the near future, they may have a town that we would find it very inspiring to live in. For it is where men are now achieving, not where they have achieved and are now sitting back admiring the past, that we would want to live.

On the other hand, there is no limit to achievement except the limit imposed by our personal limitations. So where we find a community that has done a lot and is still going ahead with the same vision and enthusiasm and energy to fresh achievement, there we probably shall find the people with whom life would be best worth living.

I assume that the existence of a town or city depends upon business. The first test of community excellence therefore is: What kind of a place is it for business? And the answer to this question goes a long way toward answering that other important question: "Is it the kind of a town we—you and I—would like to live in?" For I also assume that we must earn the living we are going to live.

Having assured ourselves of the excellence of our town from the essential point of its providing us with a living, the next question is, What does it provide *beyond* mere living? For, essential as we feel that mere living is, that alone will not satisfy us; much less will it make others who are already making a living elsewhere look upon our town with desire.

Some day the hard-boiled man wakes up to find that his associates who have made their pile have moved to some other place to spend it, and the fellow who is irked by the sight of toil realizes that it is on the profits of business that he exists. As these two scold each other the audience begins to wake up to the fact that business is the basis of most of what makes life worth living. Beauty, art, music; comfortable homes, a gracious social life—all these come from the profits of business. And at the same time it wakes up to the complementary fact that business is not an end in itself, but is a means to an end, "that we may live more abundantly."

So we begin to understand that while business is the first essential to our town, it is not the whole town, and consequently instead of spoiling the rest of the town it must make the rest of the town a better place to live in. I am therefore going to suggest an enlargement of our first test:

"While the existence of a town or city depends upon business, that existence is not justified unless the profits of business make life in that town constantly more and more worth living."

Assuming that we are agreed upon this double-barreled proposition, we shall proceed by defining a series of excellences by which to measure our town.

First Item.—My first item in grading our town is to assume that it has a variety of industries none of which are mutually harmful. A blast furnace and a silk mill, for example, do not make ideal neighbors.

Second Item.—The industries of our town should be those for which the town offers peculiar advantages.

Third Item.—Commerce.—This is put third instead of first because in spite of historical development, commerce has come to depend, especially in retail business, somewhat on industry.

Fourth Item.—Has our town a plan which will guide its future growth, and regulations which will prevent short-sighted and greedy individuals from handicapping business and spoiling those things upon which we spend the profits of business?

Fifth Item.—Does our town have good housing?

Sixth Item.—Education.—Does our town provide enough schools for all its children, and are all its schools good?

Other Items.—Recreation—public; outdoor: playgrounds, parks, etc.; indoor: music, etc.

Commercial.—Bowling alleys, poolrooms, movies, theatres, music, etc.

Public Health.—Site of the city, natural drainage, water supply, sewerage, waste disposal, health department.

Security.—Fire, police-courts, jails.

Neatness and Repair.—Public and semi-public buildings, railway station, streets and public places, private buildings.

The condition of these indicates whether our town has or has not community spirit, alertness, self-respect.

Taxes and bonded indebtedness, if too high, indicate slackness in administration, or worse, indifferent citizenship, lack of results from expenditures. If too low, indicate an indifferent citizenship and lack of civic pride. Municipal expenditures should be investments which in large measure produce financial results by facilitating business and raising values. Some, like expenditures on schools, are investments in the future.

Expenditures for present improvements, like street paving, should be entirely completed, bonds paid up, during the life of the improvement.

If city has a debt incurred to meet current expenses or to pay for improvements which are now used up it indicates a low standard of citizenship.

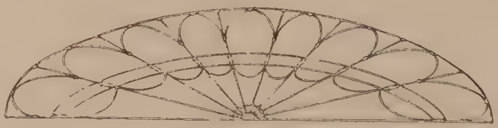
Beauty.—Beauty, like happiness, is best when secured as a by-product. An ugly thing is not made beautiful by putting a useless ornament on it. Real satisfaction comes from having the things we use every day beautiful. And they will be beautiful if they fully meet the needs of use. The present-day automobile is becoming a thing of beauty, but the main consideration is that it shall be useful. Our town will be beautiful when we give enough thought to our buildings and to our streets to make them fully efficient. The trouble now is that they are half-baked, lick-and-a-promise jobs.

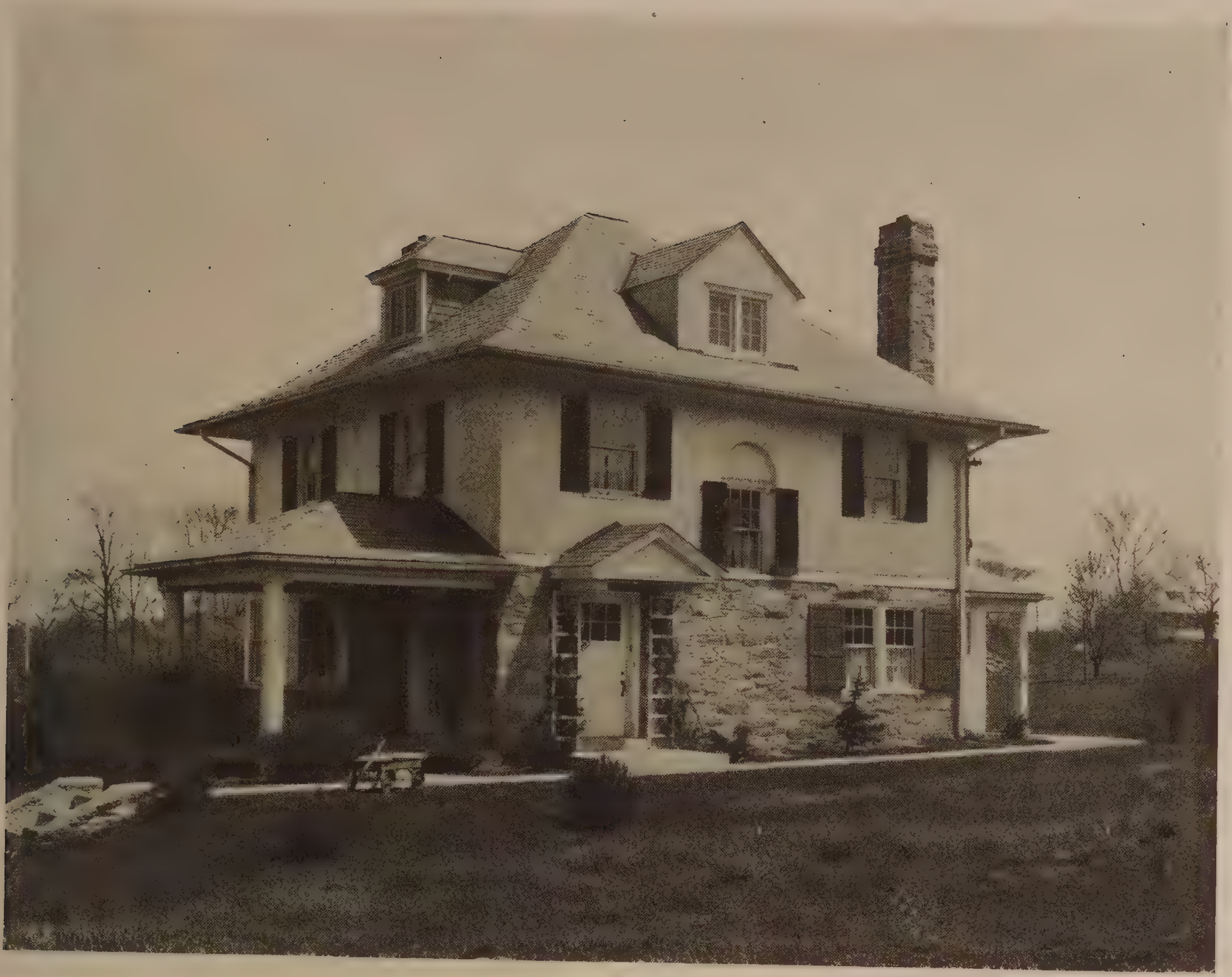
Individuality.—Our town should have individuality, not be a copy of some other place. If it has a good tradition in architecture, follow that tradition, don't build an imitation New York hotel in Charleston. Make use of natural beauties, river, valley, hills, etc. They are never quite the same as those in other towns. Use local names for your streets so that they will recall your history or make those who repeat them think of your town. When one says Fifth Avenue he probably thinks of New York, but there are a hundred other fifth avenues. When one says Peachtree Street he does not have to add Atlanta.

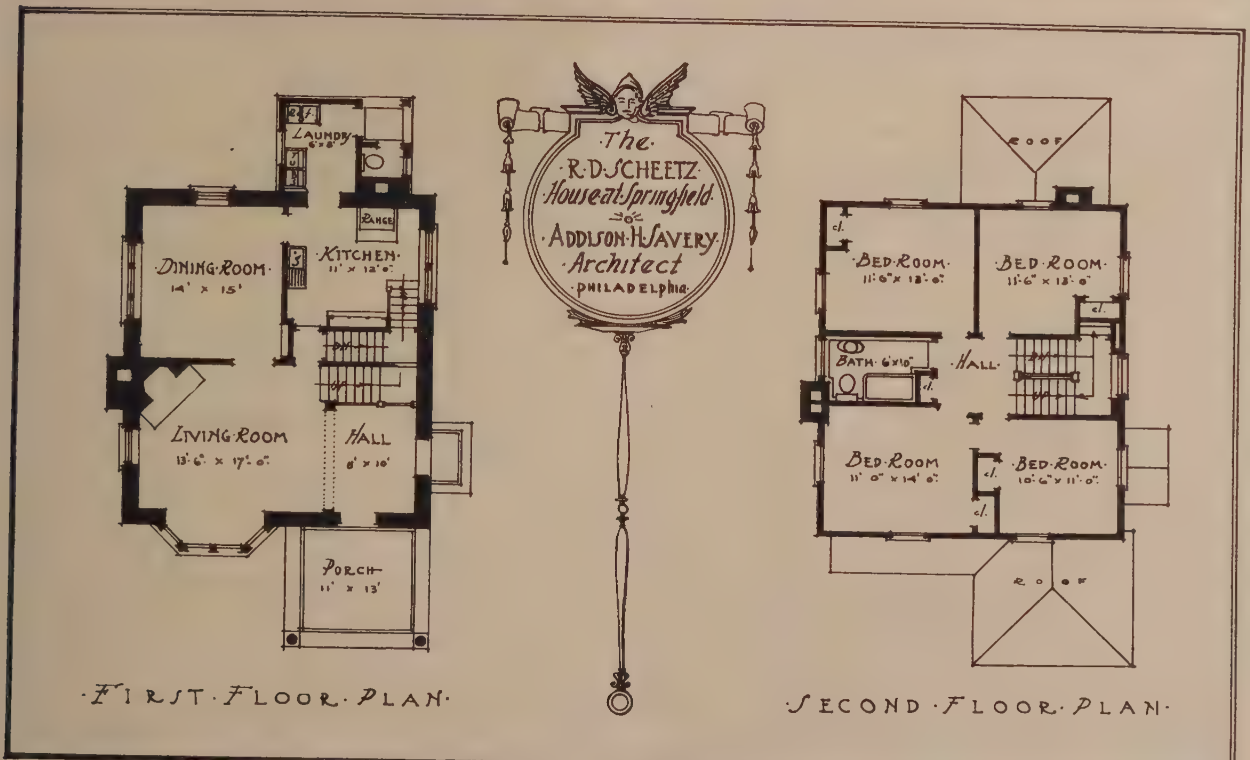
City Government.—We won't try to set up a score for the government but will assume that under our democratic system, if the community stands well on the other items listed, then it must have a fairly good government, because it has a good citizenship.

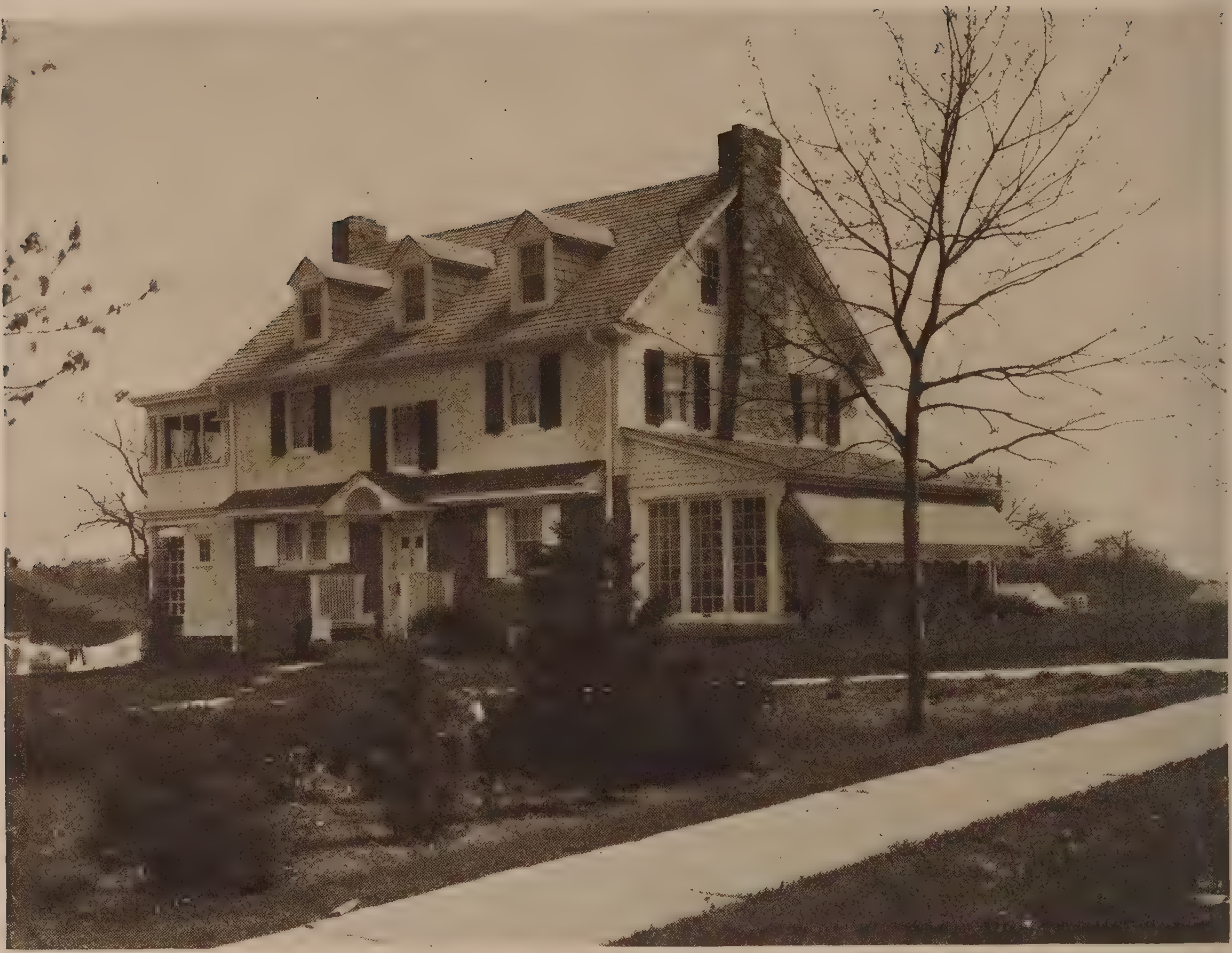
Citizenship.—Of course we have all begun to realize by this time that there is no way of getting a good government without having a good, active citizenship. Perpetual motion is as much a dream in civic affairs as it is in mechanics. But an active, effective citizenship means effort, constructive effort. So our town has its quota of civic and social agencies which afford opportunity for citizens to choose the subjects in which they are most interested, study them, experiment with them, and then, on the basis of knowledge, put them over. So we have a live chamber of commerce to present the business man's point of view on community problems, and we have philanthropic agencies to deal with our social problems.

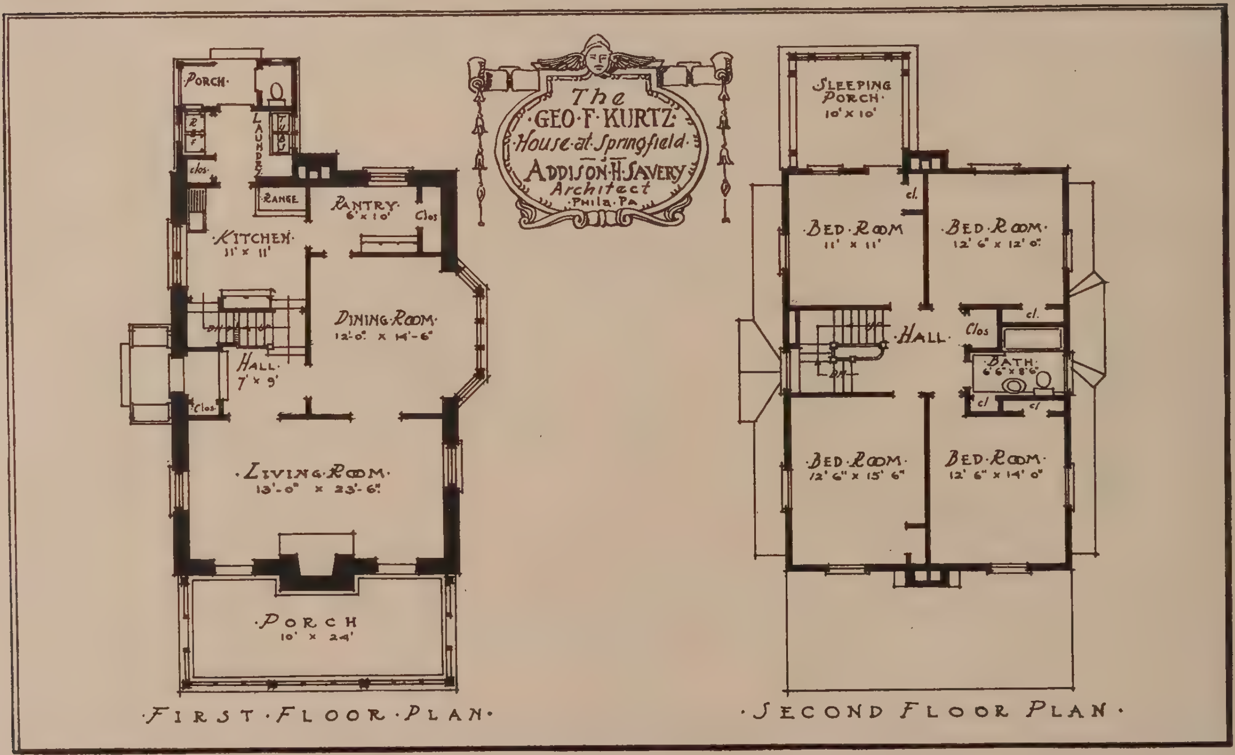
The Spirit of the People.—If there is any one thing that makes us want to live in a town it is the spirit of the people. I put this last because it is an intangible, and we Americans want something we can get a grip on. But this intangible is so important that it can't be left out. Any one of you who has lived among strangers for a while knows the joy of again being among his own people. And our own people are those who are friendly, helpful, willing to get in and push. That spirit is not natural always, but it can be cultivated. And where that spirit is there is also a good town, the kind of town we would like to live in.






The
R. D. SCHEETZ
House at Springfield
ADDISON H. SAVERY
Architect
PHILADELPHIA
LAUNDRY 6'×8'
RANGE
DINING ROOM 14' × 15'
KITCHEN 11' × 12' 0"
LIVING ROOM 13' 6" × 17' 0"
HALL 8' × 10'
PORCH 11' × 13'
FIRST FLOOR PLAN
ROOF
BED ROOM 11' 6" × 13' 0"
BED ROOM 11' 6" × 13' 0"
BATH 6'×10'
HALL
cl.
BED ROOM 11' 0" × 14' 0"
BED ROOM 10' 6" × 11' 0"
ROOF
SECOND FLOOR PLAN




The
GEO·F·KURTZ
House·at·Springfield
ADDISON·H·SAVERY
Architect
·Phila·Pa·
Porch·
Laundry
Range
Pantry·
6'x10'
Clos
·Kitchen·
11' x 11'
Dining·Room·
12'-0" x 14'-6"
Hall·
7' x 9'
Clos·
·Living·Room·
13'-0" x 23'-6"
·Porch
10' x 24'
·First·Floor·Plan·
Sleeping
Porch·
10'x10'
cl.
·Bed·Room
11' x 11'
·Bed·Room·
12' 6" x 12' 0"
·Hall·
Clos
cl.
Bath·
6'6"x8'6"
cl
cl
·Bed·Room·
12' 6" x 15' 6"
·Bed·Room·
12' 6" x 14' 0"
·Second Floor Plan·

What Has Been Accomplished by the Industrial Association of San Francisco

By Francis J. Baker, President

ROUNDING out the third year of its existence, the Industrial Association of San Francisco presents the following record of constructive achievement:

Settled city-wide building trades strike of 1921 by establishing American Plan in building industry, thereby abolishing all artificial and autocratic union rules and regulations curtailing efficiency and limiting output; including rules and regulations rigidly restricting admission of apprentices to the several building trades.

Provided impartial machinery for establishing wages in building trades, and enforcement of wages thus established.

Maintained free trade-schools for plasterers, plumbers, painters, paper-hangers, bricklayers, tailors, molders, tile-setters, and housesmiths; from which have been graduated some 1,000 apprentices and in which approximately 700 are still taking training.

Effectuated American Plan in whole or in part in the following (in addition to the building industry) industries: lithographic, cigar, shoe, garment, taxicab, metal, warehouse, glass, lumber, hotel and restaurant, and candy.

Effected a plan of employee insurance by means of which it has been possible for the first time to offer to building trades workers group insurance at rates 60 to 80 per cent less than ordinary insurance could be purchased, and under which thousands of building trades workers have secured policies covering death and total disability.

Established a safety service to supplement safety inspection by the State and municipality, to the end that the hazards of industry may be reduced to the smallest possible minimum.

Maintained a free employment bureau which has placed more than 20,000 men and furnished help in all lines with no expense either to employers or to employees.

Effected a comprehensive improvement programme for foundry operation, so that American Plan foundries are rapidly becoming superior to any others on the Pacific coast, and up to standard of best foundries in the United States, and are thereby securing work heretofore done elsewhere on the Pacific coast and in the East.

Settled numerous incipient controversies which might otherwise have led to serious industrial strife.

Protected the workers' interests, and co-operated with workers by adjusting their grievances, by preventing any discrimination between union and non-union men; and by absolutely enforcing the eight-hour day, good wages, and decent working conditions.

Protected the public interest so thoroughly that while building permits have steadily increased and the entire community has prospered greatly and progressed rapidly, strikes have been almost wholly eliminated. Indeed, San Francisco went through the year 1923 without a single job or jurisdictional strike in the entire building industry; and is the only large known city in the Anglo-Saxon world where union and non-union building trades workers, in the same craft, work side by side on the same job.

This, in brief, is the record of constructive accomplishment which the Industrial Association can point to as it concludes the third year of its community endeavor. That it has rendered an invaluable service both to San Francisco and to the whole country is attested by the fact that its membership is constantly increasing and that it is being called on more and more for counsel and guidance by industrial leaders of other large communities. For instance: within the past year it has been asked by representatives of three foreign governments to furnish details of its method of organization and operation; and its training-school programme has been adopted by at least a dozen large cities throughout the country.

Announcements

A. D. Clark, formerly located at 316 Cahill Building, Syracuse, N. Y., has reopened his office at 115 East Matson Avenue, Syracuse, N. Y., for the general practice of architecture. Catalogues and samples desired.

Mr. Frank A. Reed, architect, of Elizabeth, N. J., announces his removal from 18 Westfield Avenue to 2 South Broad Street.

F. E. Berger and R. L. Kelley, associated architects, No. 304 Lincoln Building, Champaign, Ill., are announced as successors to Temple & Berger. Mr. Kelley, who joins Mr. Berger of the old association, comes from a comprehensive practice of his profession in Illinois and in Texas.

The firm formerly known as Wysong & Jones has been changed to Wysong & Bengtson, Incorporated, architects, Professional Building, Charleston, W. Va.

Mr. W. A. Schabel and Mr. A. J. Grimm announce the opening of their office for the practice of architecture at 335–336 Erie Building, Cleveland, Ohio.

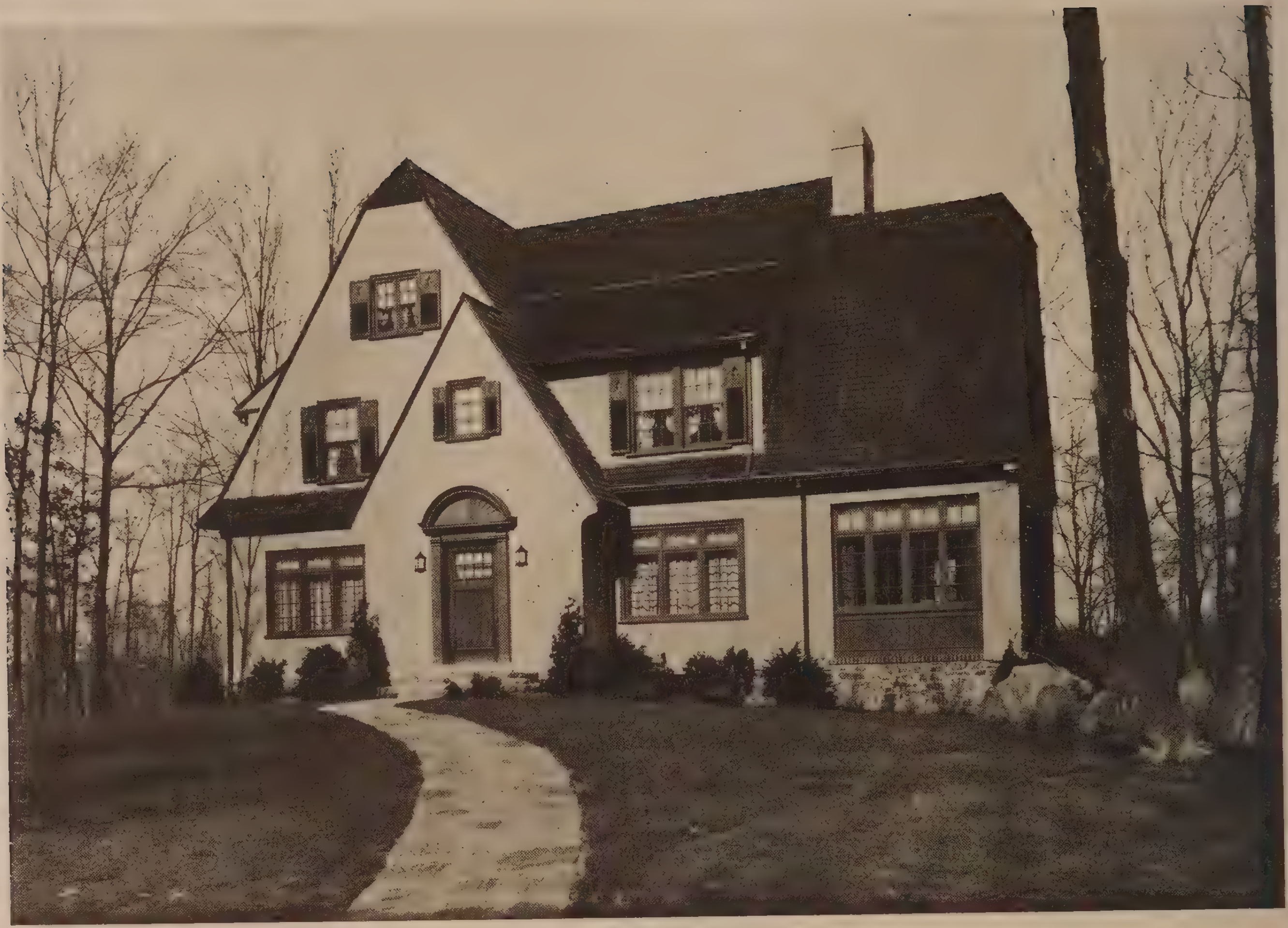
Howard H. Hahn, architect, announces removal of offices to Room 524, Madison Terminal Building, Chicago.

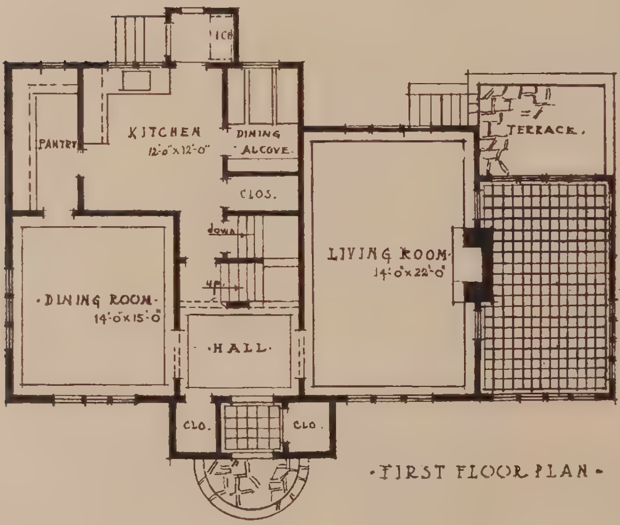
Stern & Peyser, architects, announce the removal of their office to 12 East 1st Street, Mount Vernon, N. Y., on September 1st, 1924.

Edward M. Adelsohn, registered architect and engineer, desires to announce the completion of his new offices in the new Municipal Bank Office Building, at Pitkin and Stone Avenues, Brooklyn, on the 4th floor, Rooms 404, 405, 406. The new offices have been especially designed and constructed, and an extensive display of modern building materials has been provided.

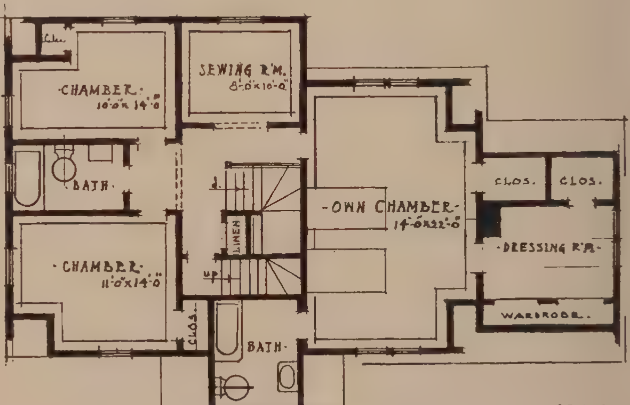
Warren Webster & Company take pleasure in announcing the opening of a New Haven branch office at 902 Chapel Street, New Haven, Conn., under management of Henry R. Briggs. This branch office is opened to meet the convenience of their many customers in the State of Connecticut, north and east of Norwalk. The New Haven office will be operated as a branch of the New York office. John A. Serrell, engineer-in-charge, 15 West 34th Street, New York, N. Y. Executive office and works, Camden, N. J.

Jerome F. Wood wishes to announce that he has dissolved partnership with the firm known as Brockett & Wood, 345 Powers Building, Rochester, N. Y., and has entered into a new copartnership for the practice of architecture under the name of Wood & Drechsler, with offices located at 305 National Bank of Rochester Building, Rochester, N. Y. Manufacturers' samples and catalogues are solicited.





FIRST FLOOR PLAN



SECOND FLOOR PLAN.

HOUSE, W. J. GRACEY, NEW ROCHELLE, N. Y. Frank Wyatt Woods, Architect.

Book Reviews

MASTERS OF ARCHITECTURE. Charles Scribner's Sons, New York.
McKIM, MEAD & WHITE. By C. H. Reilly.
FISHER VON ERLACH. By H. V. Lancaster.

These two new volumes in this interesting series offer a contrast of styles as far apart as the poles. This famous American firm, made up of men of varied taste, has left its impress upon our architecture in many notable buildings, all of them marked by qualities of distinguished design, many of them outstanding examples of what we think of as our best American architecture.

In tracing the history of the firm the author has paid tribute to its founders, McKim and Stanford White, and to other men whose careers have carried on the traditions of this office. In such a brief introduction as accompanies the plates, there is only space for reference to essentials, for a pointing out of some of the reasons for the firm's great reputation, and for passing comment on some of their famous achievements.

"We have, with the rise of this firm, a new phenomenon in the history of architecture, and one with which the world will become more and more acquainted until some fresh cataclysm like a class war breaks up our civilization. With McKim and his colleagues, and his hundreds of brilliant disciples and draughtsmen, there exists to-day for the first time an architecture of conscious eclecticism. Our greast masters in the past evolved distinct and individual styles of their own. Wren, Robert Adams, Cockerell, Barry, we know them all and easily recognize their diverse manners. We can, it is true, recognize a McKim, Mead & White building as we walk about New York, but we can only recognize it by its greater breadth of treatment, its finer scale, its nobler and more reticent manner than that of its neighbors. It is not different in kind and style as was the work of the older masters. It is in this sense not so individual. Is it then, as things are to-day in the greater modern world, any the worse for that? I would be willing to maintain the contrary."

Von Erlach, an Austrian, was contemporary with Wren, but his work is in striking contrast with the good taste of that great man. He left his record in Vienna, and it is a record of the Baroque, the qualities of which, as the author says, "often lack appreciation in our country by reason of national temperament." Happily this "national temperament" saved England from many things that have characterized both Austrian and German art and architecture.

OLD ENGLISH FURNITURE. A View of Its Characteristics from Tudor Times to the Regency for the Use of Collectors, Designers, and Students. By J. T. Garside, Lecturer on the History of Furniture and Decoration at the Polytechnic, Regent Street, London. Division I: The Oak Period, 1500–1630. With Numerous Illustrations from the Author's Measured Drawings and Sketches, and from Photographs. Charles Scribner's Sons, New York.

This first volume of a series of four—the others will deal with Late Stuart, Middle Georgian, Georgian, and Regency—gives ample promise of being a most valuable and serviceable contribution to a fascinating subject. There are a number of histories of period furniture, among them, of course, volumes of distinction, but we know of nothing that will so well enable both the informed and the uninformed student or collector to so readily and visibly determine special characteristics. The evolution of design is made clear, special features of carving and detail are shown in the admirable illustrations.

The furniture shown is not the elaborate and costly pieces of the great houses, but that of the smaller country houses, farms, and cottages. It is not a guide to museum pieces, therefore, but something much more useful to both designer and collector.

The author has drawn a number of typical pieces of furniture of the time to illustrate the varying shapes of chairs, tables, chests, cabinets, and other characteristic pieces, and these are supplemented by a number of photographs showing the actual appearance of contemporary pieces of good design. The chief feature of the work is the series of comparative plates of detail. The author is firmly of the opinion that knowledge and understanding are to be found rather by the study of comparative examples, features, and details than by reading elaborate descriptions, and he has, therefore, prepared a series of thirty plates, each of which is composed of twelve to fifteen examples of some important feature or detail arranged in chronological order. Thus plates are devoted to such objects as table-legs, bedposts, corbels, finials, pendants, turned feet, spandrels, and panels—linenfold, carved, arched, lozenge, geometrical—inlaid motives and panels, carved friezes, moulded capitals, lettering, and metal fittings.

There is sufficient explanatory text, but the drawings are worth whole pages of description in helping in the interesting task of identification of period subjects.

SPANISH DETAILS: DRAWINGS, PHOTOGRAPHS, AND TEXT. By William Lawrence Bottomley. William Helburn, Inc., New York.

This portfolio of Spanish details is a notable addition to the references available for a study of Spanish architecture. The frontispiece, in color, showing details of the ceiling of the patio of the university of Salamanca, is beautifully printed, and there is another plate in color of the ceiling of the arcade surrounding the patio. The subjects included in the collection comprise patios, ceilings, doorways, fountains, grilles, balconies, rejas, windows, stairways, gates, crestings.

Mr. Bottomley's photographs include, naturally, many more or less familiar subjects, but they have been selected with excellent judgment, and both with an eye for the picturesque and thought for an adequate revealing of structural and ornamental details. The real and great value of the work we feel lies especially in the series of beautiful measured drawings. These are a distinct contribution to our knowledge of Spanish design, and will be valued by every one who sees them. It is a pleasure to look at a series of drawings that have been so carefully and skilfully done.

We seem to have developed a new and lively interest in Spanish architecture in general, and both on the Pacific coast and in the South there are going up many buildings, large and small, that reveal an obvious Spanish derivation. This portfolio, of more than a hundred plates, is handsomely presented, and will find its place as a useful and suggestive reference in the architect's library. The text consists of only a brief foreword, from which we quote the following illuminating paragraphs:

"The characteristic qualities of Spanish architecture are its dignity, austerity, and distinction contrasted with a romantic sense and a vividness of imagination. Large, simple wall surfaces bring out the rich concentration of decoration around doorways, windows, and arcades. Throughout the peninsula is felt a blending of classic tradition and Moorish influence fused and harmonized by the strong individuality of the Spanish race. The fact that they were soldiers fighting in Holland, France, Italy, and the Holy Land, and sailors in close contact also with Sicily, Northern Africa, and Venice, brought to them everything in the known world, while their racial pride and geographical isolation served to stamp whatever they did with a distinct national flavor.

"In order to give more information, the plates are often made up of motives taken from adjoining parts of one building, drawn in the proper scale and proportion. It is hoped that the thanks of the designers will outweigh the censure of the author's conscience for taking such liberties with the monuments of Spain."

WOODWORKING MACHINERY, by William Noyes, M. A., and FUNDAMENTALS OF HOUSE-WIRING, by George A. Willoughby, are two books of practical usefulness that come to us from The Manual Arts Press of Peoria, Ill.

Mr. Noyes is district director, Bureau of Rehabilitation, Albany, N. Y., and Mr. Willoughby is supervisor of electrical work, Arthur Hill Trade School, Saginaw, Mich.

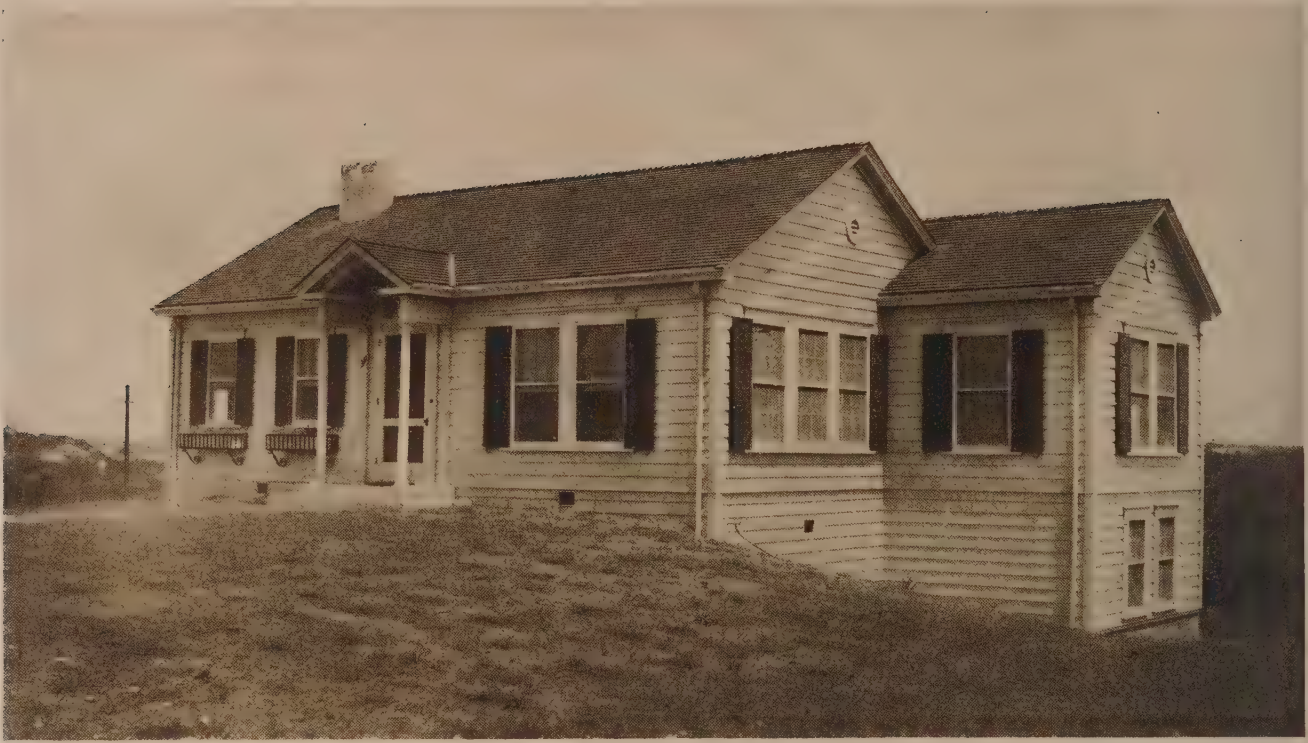
ARCHITECTURAL DETAILS. By Louis Rouillion, B. S., M. A., Director of Mechanics Institute, New York City, and Chanler George Ramsey, Registered Architect, State of New York, Instructor in Architectural Drafting, Mechanics Institute. John Wiley & Son, Inc., New York.

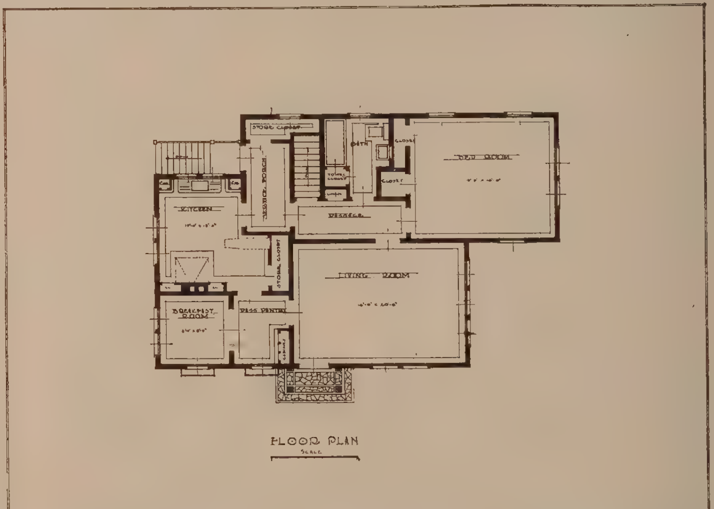
This is a thoroughly practical book of drawings. Its purpose is to give architects, builders, and homemakers definite and comprehensive information upon building construction. Every detail in the process of good building is shown: doors, shutters, joints, mouldings, foundation details, arches in brick and stone, windows, louvres, framing, walls, porch details, girders and trusses, etc., etc.

It makes a complete guide for the student in the technique of architectural drafting.

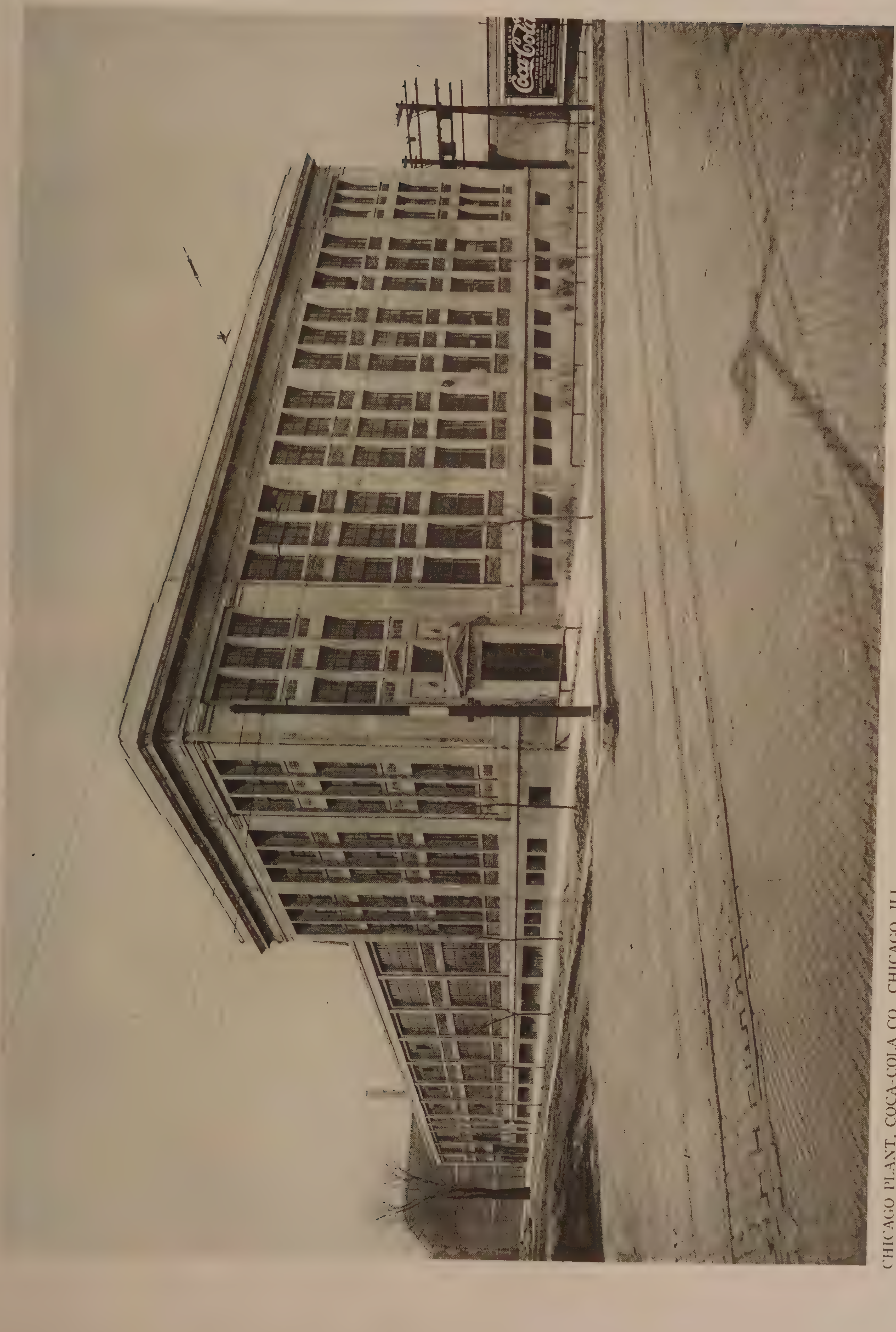
Mr. Goodhue's Office Will Be Continued by Associates

ARRANGEMENTS have been completed with the estate of the late Bertram Grosvenor Goodhue for the taking over and continuation of Mr. Goodhue's office and organization. The firm will be known as Bertram Grosvenor Goodhue Associates, a partnership consisting of Mr. Goodhue's manager, Francis L. S. Mayers, and two of his foremost designers, O. H. Murray and Hardie Phillip. E. T. Jago is also associated with the partners, while Elliott Chisling and J. P. Wilson are members of the staff with E. P. Praeger in charge of the structural end.





COTTAGE OF HENRY L. PANCOAST, SAN ANTONIO, TEXAS. Richard Vander Straten, Architect.



CHICAGO PLANT, COCA-COLA CO., CHICAGO, ILL.

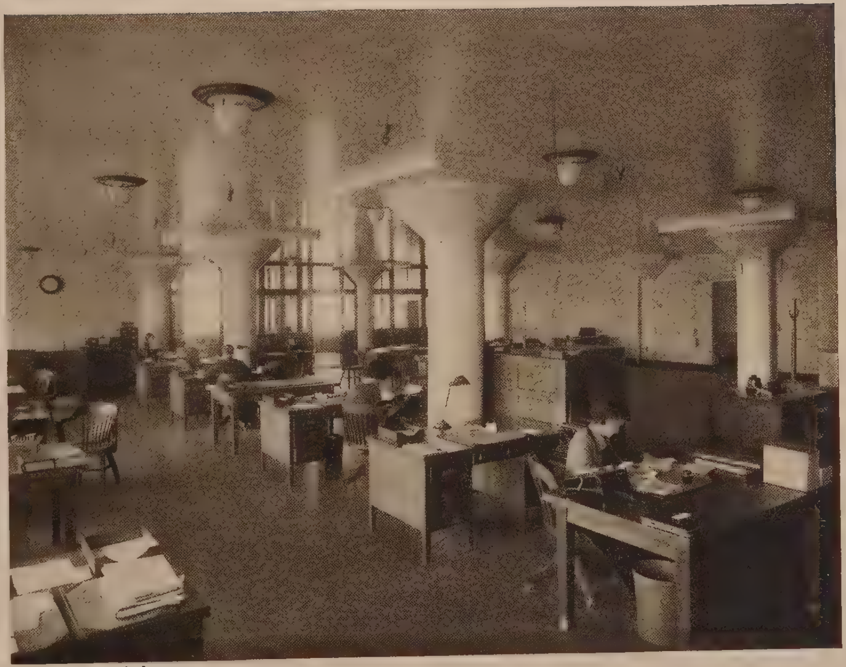
Lockwood, Greene & Co., Architects and Engineers.

Coca-Cola Company Plant, Chicago, Illinois

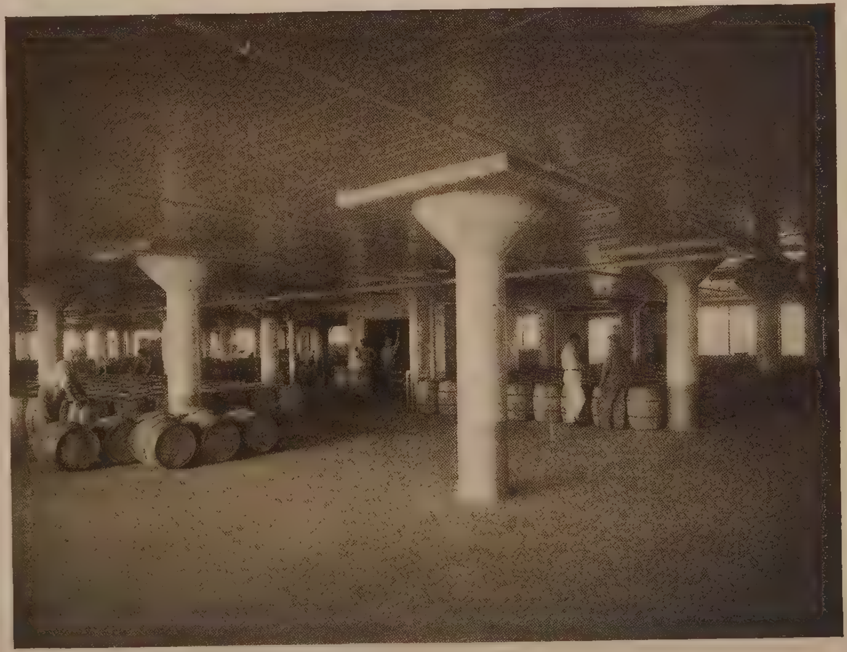
THE picture shows the Chicago plant of the Coca-Cola Company. The plant has an ultimate capacity of 50,000 gallons of Coca-Cola syrup per day. The building is of heavy reinforced concrete construction, 115 feet by 275 feet. The entire plant is sprinklered, giving low insurance rates with maximum protection against fire. The boiler-room equipment consists of two 150 horsepower H. R. T. boilers with ash-blowing equipment, which assures cleanliness.

The general offices are on the second floor of the three-story part. For the comfort and convenience of women employees a furnished rest-room has been provided, and for the further convenience of all employees a café with a seating capacity of thirty at one time is available. Shower-baths for employees have also been provided.

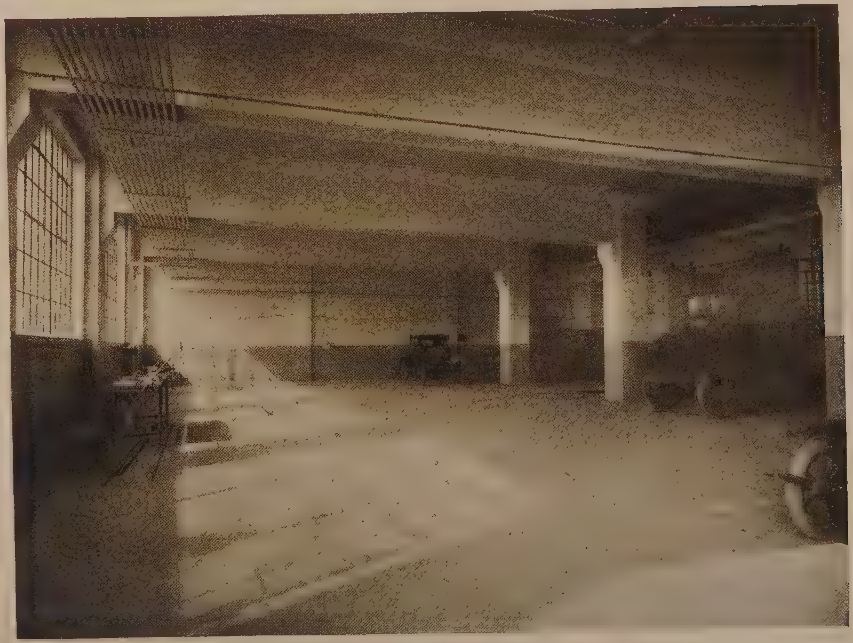
The site selected for this plant lends itself to economy of manufacture. The bulk of the raw product is granulated sugar, and this is received by rail and unloaded into the second floor in the form of Coca-Cola syrup, which is barrelled and distributed by truck to the city proper. Shipments outside of Chicago are elevated from the first to the second floor and loaded into cars from a loading-platform on the second floor. The basement is used for cooperage, painting, sterilizing of barrels, and miscellaneous storage.



Office, second floor.



Looking toward loading-platform.



Garage.

CHICAGO PLANT, COCA-COLA CO., CHICAGO, ILL.
Lockwood, Greene & Co., Architects and Engineers

Specifications for Waterproofing and Dampproofing Materials

SPECIFICATIONS for asphalt, coal-tar pitch, and rag felts for use in the waterproofing and dampproofing of masonry and concrete structures have been adopted by the Federal Specifications Board, and will serve as master specifications for government purchases of such materials. They have been published as a series of circulars of the Bureau of Standards. Copies may be obtained for five cents each from the Superintendent of Documents, Government Printing Office, Washington, D. C. The titles and numbers are as follows:

"Coal Tar Saturated Rag Felt for Roofing and Waterproofing"	C 156
"Coal Tar Pitch for Waterproofing and Dampproofing"	C 155
"Asphalt for Waterproofing and Dampproofing"	C 160
"Asphalt Saturated Rag Felt for Roofing and Waterproofing"	C 161
"Asphalt Primer for Roofing and Waterproofing"	C 162

These specifications were prepared by the technical committee on bituminous roofing and waterproofing materials of the Federal Specifications Board, careful consideration being given to suggestions received from producers of these materials, from waterproofing contractors, architects, engineers, and from large consumers of the materials such as railroads.

The asphalt and coal-tar pitch specified are intended to be used either alone, as a dampproof coating for concrete, masonry, etc., or as plying cements, respectively, with asphalt and coal tar saturated rag felt, in the construction of membrane waterproofing. The asphalt is suitable for use on railroad bridges, tanks, retaining walls, dams, conduits, foundations of buildings, tunnels, subways, pools, reservoirs, etc. The coal-tar pitch can be used on similar structures, except where excessive vibration occurs, and where the temperature in service is likely to exceed 100 degrees Fahrenheit.

These specifications are considered fair to both producer and consumer, and are expected to secure products suitable for the particular conditions of service outlined in the specifications, and to allow wide latitude in the selection of raw materials and methods of production. They cover materials that are suitable for all sections of the United States, and which can be obtained upon a competitive basis. They give the physical characteristics of the material as well as methods of sampling and testing deliveries.

The Future of Lake States White Pine

OF the 350 billion board feet estimated to have comprised the original stand of white pine in the Lake States, 300 billion have been cut, more than 40-odd billion have been destroyed by fire, and possibly 5 billion board feet, mainly in Minnesota, remain to be cut, according to the Forest Service, United States Department of Agriculture.

What can be expected in the future for this economically important tree is at present a subject of study by the Lake States Forest Experiment Station. Twenty-five years ago Professor Filibert Roth, until recently dean of forestry, University of Michigan, estimated that there were then 200,000 acres of second-growth white pine in Wisconsin. Since then fires on cut-over land have considerably retarded additions to this area, and have to some extent reduced the original tracts.

Michigan and Minnesota probably have each as much as Wisconsin, or more. While this second growth is very open, the fact that the old forests yielding 5,000 to 40,000 board feet an acre ranged only from twelve to one hundred trees to the acre indicates that good yields may be expected from the second-growth stands, and at considerably earlier ages than those of old-growth areas.

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In the new $5,000,000 Saks and Company store, on Fifth Avenue and Fifty-first Street, New York, Starrett & Van Vleck, architects, *Gold-Seal* Treadlite Tile, in a mahogany and stone gray design, is extensively used. Noiseless, resilient and comfortable under-foot, this Bonded Floor adds a touch of distinction that beautifully sets off all the other furnishings.

In Fifth Avenue's Newest Store

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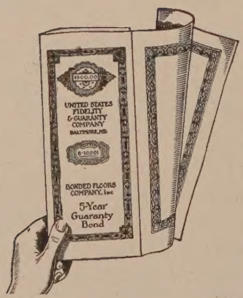
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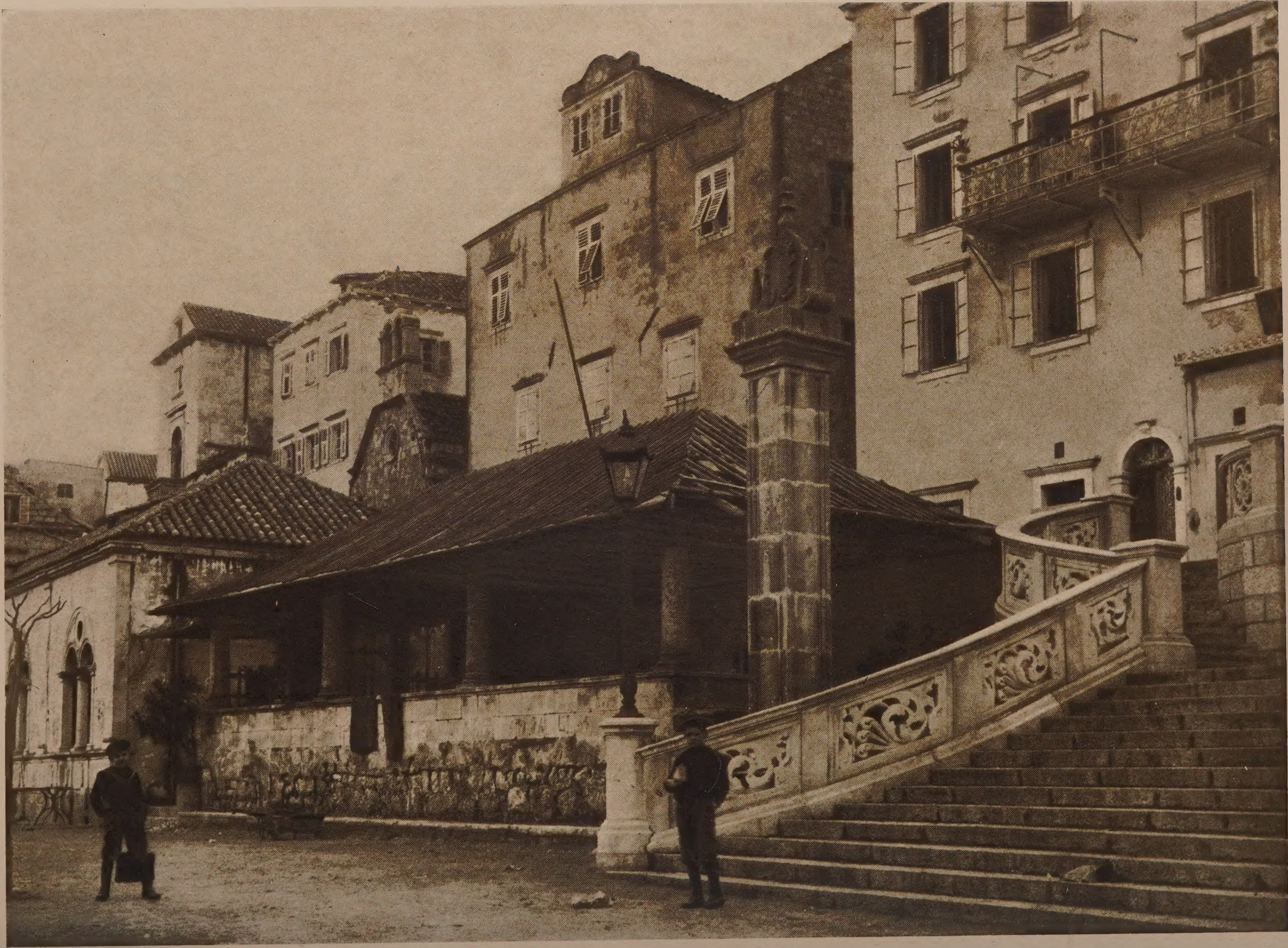

WATER FRONT, CURZOLA.